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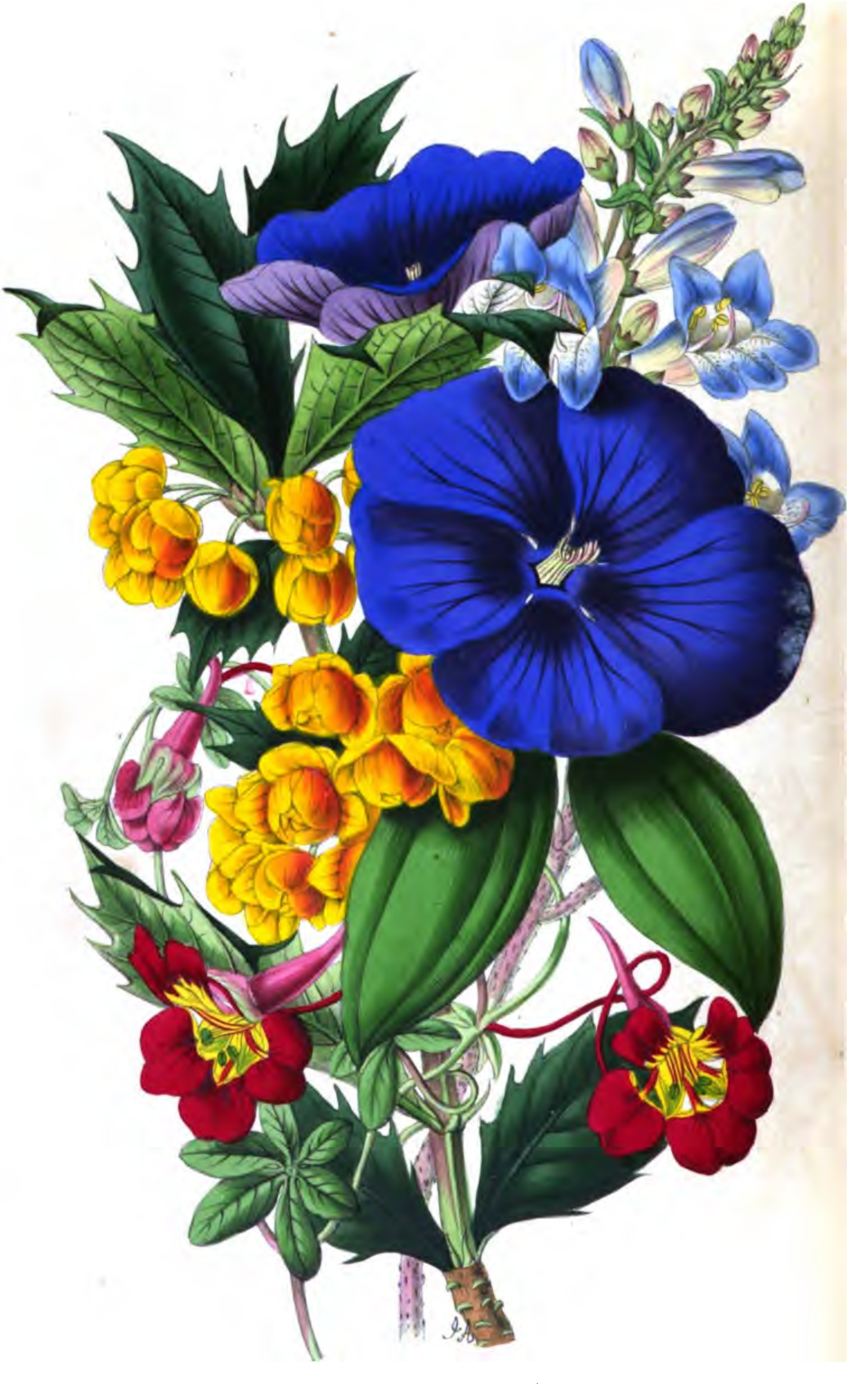

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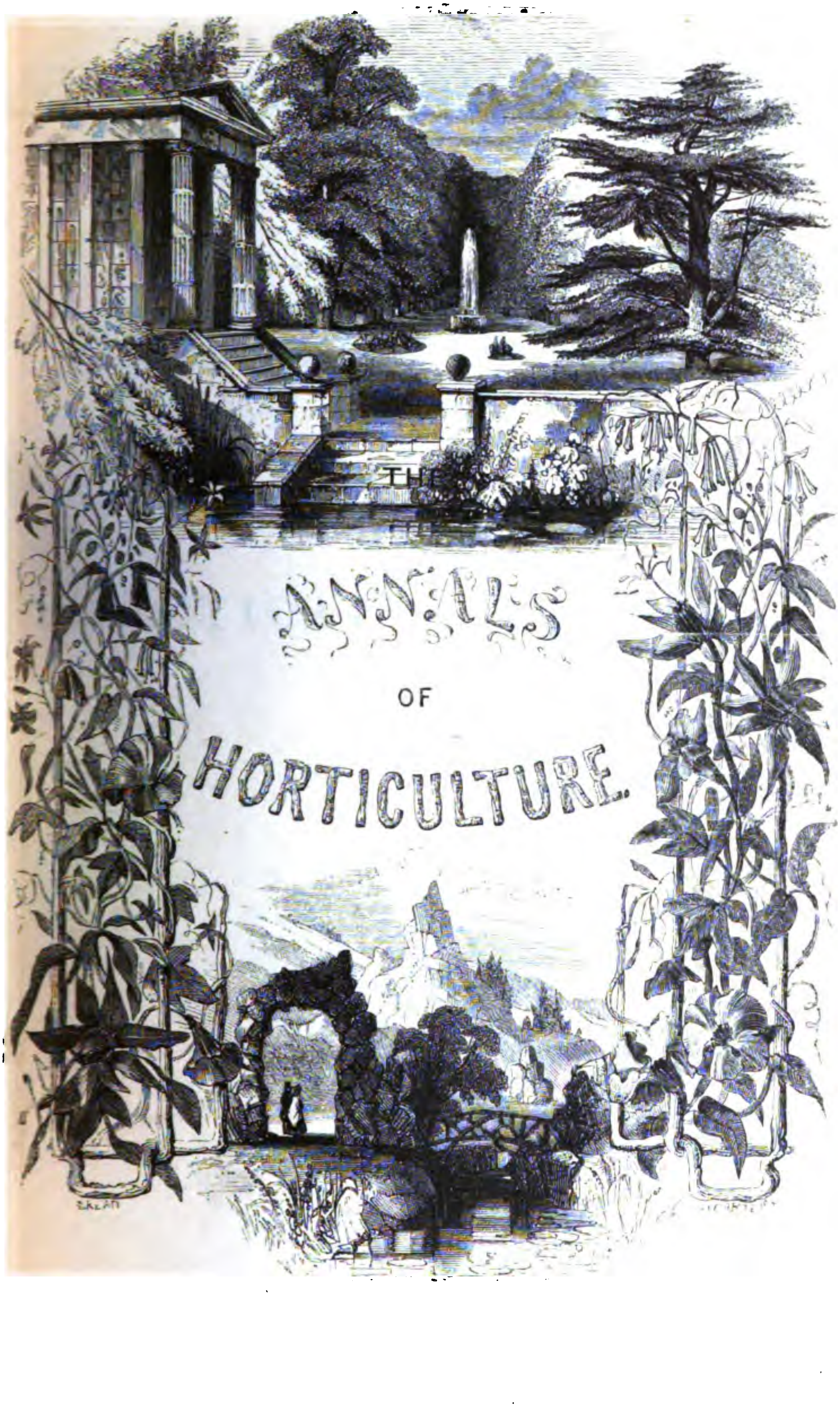
THE
ANNALS
OF
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#

THE

NNALS OF HORTICULTURE;

AND

Year-Book of Information

ON

PRACTICAL GARDENING,

FOR 1848.

LONDON:
CHARLES COX, KING WILLIAM STREET, STRAND.
1848.

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Nov. 2, 1918

TO

THE RIGHT HONOURABLE

THE EARL OF AUCKLAND

KNIGHT GRAND CROSS OF THE ORDER OF THE BATH

VICE-PRESIDENT OF THE HORTICULTURAL SOCIETY OF LONDON

&c. &c. &c.

THE PROMOTER OF HORTICULTURE IN BRITISH INDIA

AND ITS FRIEND AND PATRON AT HOME

This Volume

IS WITH HIS LORDSHIP'S PERMISSION

RESPECTFULLY DEDICATED

BY HIS LORDSHIP'S

MOST OBLIGED AND DEVOTED SERVANT

THE EDITOR.

PREFACE.

HORTICULTURE is one of those subjects which teem with endless variety. The raising of new Flowers, Fruits, and Vegetables—the importation of strange Exotics—the alterations in Practice, and the improvements in Culture,—furnish from time to time a continuous source of important and highly-interesting matter, well worthy of recording, and not less worthy of being studied.

To collect, and concentrate in one Annual Volume, all matters of practical utility that have occurred during the year, has been the object of this Work; and the success of the Volumes for 1846 and 1847 amply testifies that our labours have not been lightly appreciated—a compliment which we gratefully acknowledge.

The subjects of every year are novel; and, therefore, however much the several Volumes may assimilate in general character, the Contents of each are widely different, and replete with original and practical lessons;—in fact, the "Annals of Horticulture" literally form a comprehensive History of Modern Gardening, and an Encyclopædia of Horticultural Information for the time being.

As heretofore, the Work will be continued in Monthly Parts, as the "Horticultural Magazine;" and at the close of the year will be bound up as the "Annals of Horticulture," in a Volume similar to the present.

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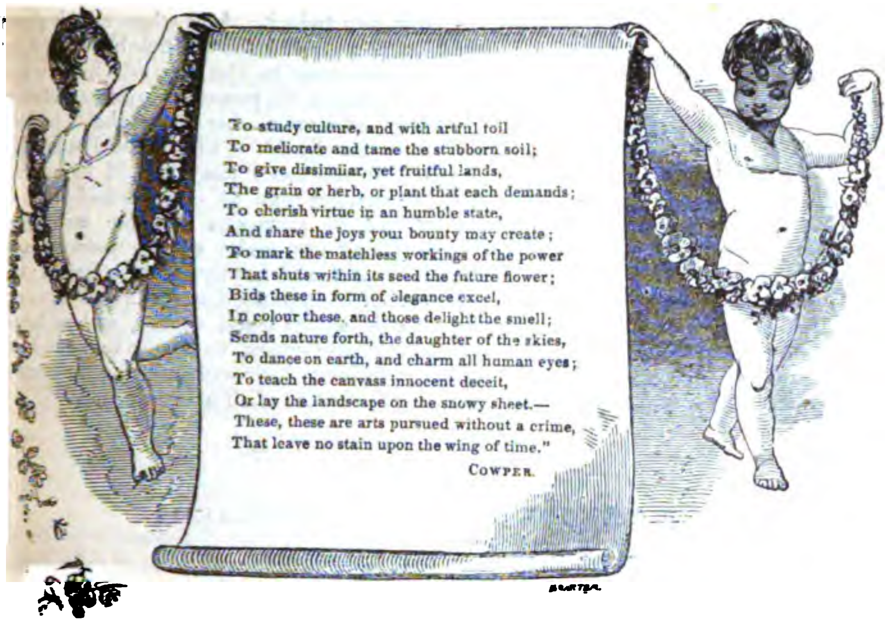
ERRATUM.—Page 522, for *Sigochloa* read *Ægochloa*.



To study culture, and with artful toil
To meliorate and tame the stubborn soil;
To give dissimilar, yet fruitful lands,
The grain or herb, or plant that each demands;
To cherish virtue in an humble state,
And share the joys your bounty may create;
To mark the matchless workings of the power
That shuts within its seed the future flower;
Bids these in form of elegance excel,
In colour these, and those delight the smell;
Sends nature forth, the daughter of the skies,
To dance on earth, and charm all human eyes;
To teach the canvass innocent deceit,
Or lay the landscape on the snowy sheet.—
These, these are arts pursued without a crime,
That leave no stain upon the wing of time."

COWPER.

HORTICULTURAL PURSUITS;

THEIR IMPORTANCE AND ADVANTAGES.

COWPER must have been a gardener; none but a Horticulturist at heart could have conceived the beautiful ideas which are breathed in every sentence of the above quotation. No one who had not experienced the calm delight arising from the contemplation of his plot of ground, could have so happily enforced the advantages of cultivating the soil, nor have given so comprehensive a lesson in so few and such pleasing words. They form a text from which a divine might preach a lengthy sermon, or on which a lecturer might dilate for hours. The advantages of study, the practical preparation of the ground for its work, the proper choice of subjects for the situations and soil, the duty of cherishing industry among the working classes, and affording them the means of enjoying their recreative labour, are all plainly and prettily laid before us in the most inviting form. Who can read these few lines without comprehending in the picture the whole system of allotment and cottage gardening? And what is more charming to the prince and the peasant than a well kept parterre; what more lovely to the eye and fragrant to the sense than the flowers with which it is bespangled? In the very depth of winter a few sunny days bring out some straggling beauty to aid the more staple occupant of the season. The laurustinus, which begins to open its snowy bunches even before Christmas, seems to invite all other beauties to follow his example. The Christmas rose at his feet rivals him in whiteness, and seems to say he shall not bloom alone; while the coral and golden berries of the holly shine above and brighten the scene. January scarcely passes, unless in very dreary seasons, without opening some truant wall-flower or primrose before its time. February adds snow-drops, daffodils, polyanthuses, primroses, and crocuses, all of which become plentiful in March; and April brings forth the auricula, the hyacinth, early tulip, narcissus, jonquil, and crown-imperial, and a bevy of beauties, which vie with each other in brilliance and in fragrance. And now comes May, with her thousand blossoms of all hues and scents. The gaudy tulip now ascends her throne as Queen of May flowers. Anemones and ranunculuses carpet their respective beds with all the colours of the rainbow. June brings forth the rose, which on the dwarf bush, or the stately standard, or covering the front of the cottage, is alike beautiful, and with its humble companion, the pink, sheds its odour in all directions; and thus we might proceed through the whole year, noticing the carnation and picotee, and the thousand summer flowers, which in rapid succession fill up their respective months, until the dahlia, the Michaelmas-daisies, and other autumnal flowers are cut off by the frosts, with which, however, the gay chrysanthemum has a stand-up fight, and to the last braves the worst weather in the borders, as if determined to see all other beauties out. But even now the winter aconite, the autumnal crocus, and the Sternbergia lutea begin their reign, in purple and yellow grandeur; and scarcely one solitary day in the year is the well-kept garden deserted. If it be not a grateful task to tend all these still more grateful subjects, we hardly know where to seek one. But if the garden yields all these sources of delight in flowers, it is but a tithe of its value, as compared with its fruits and vegetables; and who is there to be found indifferent to the productions he can take from his own cultivated spot? Is there a single vegetable to be purchased, that we eat with the relish that accompanies a dish of one's own growing? What so sweet as peas of one's own gathering, or cabbages of one's own cutting? What fruit so palatable as that from our own trees? And when all this pleasure can be provided for the humble cottager, how culpable must be the man who neglects any of the means in his power to promote that object? Cowper is right: his words should be printed in letters of gold. They should be familiar as nursery-rhymes; they should be written on the opening page of every school-book; they should be engraven on the memory. If anything can make a man industrious, and contented, and happy, it is a garden; and it cannot be impressed upon his mind too early, that he should teach others, and, so far as he can, enable others, to enjoy that which is so conducive to their welfare, and the moral and social comfort of all around them.

THE KITCHEN GARDEN AND ORCHARD;

THEIR FORMATION AND MANAGEMENT.

The principal considerations in the formation of a Kitchen Garden, are situation, enclosure, drainage, preparation of the soil, and disposition of the surface; and whether the area be large or small, these particulars will equally require attention.

Situation.—The very best situation and aspect for a kitchen garden, is one moderately elevated, and sheltered on the north and east by *distant*, not *contiguous* trees. No place is better suited for the purpose than the slope of a hill facing the south-west, backed on the north by thick plantations at a moderate distance, and sheltered on the east by less dense and more distant belts of trees. When such a situation cannot be obtained, the nearer it can be approached the better.

The nature of the soil is a matter of less importance than situation, because, whatever its nature may be, if there is a sufficient bulk of it resting on the subsoil, it may be altered and improved. What is called a deep free loam is the most suitable for all kinds of crops, and the nearer that inferior soils can be made to assimilate to that, the better. Generally, heavy soils are preferable to light ones, that is to say, clay soils are better than those of a sandy nature, as being of a more holding character, and thus capable of sustaining better crops; but they involve a greater amount of labour in their complete amelioration.

Enclosure.—All gardens should be enclosed by durable fences, as these not only afford shelter from the winds, but they are also valuable as a means of assisting in bringing to maturity the many choice fruits which a garden should contain. For this latter purpose, nothing is so good as a brick wall; and where the situation and the space admit, it should be placed a short distance within the boundary, so that both sides may be available for the training of fruit trees; the outer boundary may then consist of a compact hedge or wooden fence, or both conjointly. The slip of ground on the outer side of the wall may be thirty feet wide or more, and will be useful for vegetable crops, the varieties of aspect being turned to account in keeping up a succession. The height of the wall will of course have to be regulated by circumstances, and should bear some proportion to the size of the enclosed space, as a very high wall should not be built around a small area: whatever height in connexion with the situation may be judged most proper, the training of the fruit trees must be adapted to it. From ten to twelve feet is a usual and convenient height if the area is considerable, and this is little enough for most kinds of fruit trees. The highest portion of the wall should be across the north side of the ground, first, because it forms a protection from the north winds; and, secondly, because it presents a greater surface to the southern aspect, which is so very desirable for peaches, nectarines, and other choice fruits; this part is the better, if as much as fifteen feet in height. The thickness of the walls will be variable, according to their height, and the degree of exposure to which they are subjected. The walls should be built parallel with the surface, and not necessarily upon a true level; if the surface does not incline too much, they are best when parallel to it. Whether or not the space to be enclosed is of even outline, the walls should be built in straight portions. Various contrivances have been recommended with the view of affording additional shelter to the trees, such as building the walls in an undulating form, and with square recesses, and again with angular projections, but there is no advantage resulting from these fancies. Sometimes, where the refinements of gardening are carried to a great height, the walls are provided with flues, for the purpose of warming them; these flued walls seem originally to have been intended for accelerating the trees in the spring, but for this purpose they are worse than useless, as they only excite them into growth to be cut off by the spring frosts. In our cold and variable climate, such walls are sometimes useful in the case of the more tender fruits, in assisting to ripen the young wood towards the end of summer, which the coldness and dampness of autumn often militates against: this is, however, as before remarked, one of the refinements of gardening, and is, besides, somewhat expensive.

If walls are not erected, the best substitute is a stout close wooden fence, as high as circumstances will admit. This will also serve as a shelter for fruit trees, but is inferior to a wall, as the wood does not absorb heat like bricks, and, consequently, its surface not retaining heat like that of the wall, has less influence on the growth of the tree: it, however, secures to the trees all the advantages of shelter. Where gardens are surrounded only by hedges, or low open wood fences, the more tender fruits must be dispensed with.

Drainage.—A garden should be well drained; and as luxuriant crops of well-flavoured vegetables can only be secured by a system of deep cultivation, so it is necessary that an approach at least to what is called deep drainage should be adopted. The main or conducting drains should seldom be less than five feet deep, and the smaller or collecting drains ought to be three or four feet deep, the deeper of the two being proper for heavy soils, and the shallower for gravelly ones. If the garden is small, one main drain along the centre will be enough, but where the area is considerable there should be two or three of these. A proper and convenient outlet must be selected, and this will usually be found at the lowest point: if the ground is sloping, this will seldom present any difficulty, but in cases where the ground is level or nearly so, it will be necessary to contrive the drains so that there may be a sufficient fall to carry off the water. The smaller drains should gradually slope or fall into the larger ones. Tile drains are preferable to any others, being more durable. The distance between the smaller drains will depend on the nature of the soil and subsoil; if the latter is clay, they will require to be nearer in proportion, clay being retentive of moisture; but if sand or gravel, they may be much farther apart. In ordinary clay soils it is desirable to place them at fifteen or twenty feet apart, while in more porous soils they may be as much as thirty feet asunder. In draining a garden, however, it should never be forgotten, that it is best to err on the side of providing efficient drainage, for there is nothing more certain than that a badly drained garden will be an unfruitful one. Besides this regular series of drains all over the garden, a drain should run along the bottom of the whole of the gravel walks, communicating at proper and convenient places with the main drains. If it be a walled garden, and borders for fruit trees are to be formed, these too must have a proper series of drains, also connected with the main or conducting drains.

Preparation of the Soil.—When the drainage is completed, the next thing is to prepare the soil, in the first instance, for the reception of crops. The details of this operation will be various according to the nature of the original soil. If it be a free deep loam, it will require no other preparation than a deep and regular trenching, which should be alike performed over the whole area. Trenching will also be necessary whatever the natural soil may be, but according to its nature various additions or reductions will have to take place. Thus, if the soil be close and adhesive, consisting in great part of clay, it will be proper to remove some of the most stubborn of this clay, and replace it by coarse sandy soil, charred clay soil, or indeed any materials of a porous nature; a mixture of such materials may be used, as for instance fine coal ashes, small charcoal, road sand, (if silicious,) or burnt earth or refuse of any kind. Where the soil is a less stubborn kind of clay, a good dressing of sandy loam or any sandy earth will modify it so as to render it suitable for the crops. The quantity of materials to be added to the original soil must depend on the degree of modification required, or the quantity of material within reach; if the latter be abundant, and the soil requires a good deal of alteration, from six inches to a foot in thickness may be used, either removing or not, as may seem best, the same or a less amount of the clay. It is seldom that the thorough modification of unsuitable soils can be effected at once; it is a work of gradual improvement, every opportunity of aiding which should be turned to account. Even stubborn soils become a good deal modified simply by the operations of culture, if properly performed; the trenching of the soil frequently, and the exposing of the surface in ridges to the action of frost, wind, rain and sun, at different seasons of the year, when opportunity offers, are especially efficacious; and besides this, the frequent practice of hoeing deeply during summer, and occasionally of lightly forking up the surface, materially assist in the process of amelioration. Such soils, that is, heavy soils, should never be allowed to get at all consolidated for want of trenching, forking up, and deep hoeing ; and another very essential point is to avoid trampling on the ground, or working it, when in a wet and adhesive state. Whenever the surface of the soil is wet enough to become pasty by trampling on it, digging and trenching, and other operations connected with its improvement, should be postponed; for if, while in this state, the earth is turned over, and the pasty surface placed underneath, or if any of these operations are then continued, any previous advance that may have been made towards improvement will be set aside, and the condition of the soil rendered equally bad as at first. The addition of manure, too, assists greatly in improving the mechanical texture of heavy soils, but for this purpose it should be applied in a long littery state, and before it is too much decayed. Deep draining, trenching, the addition of porous materials, and the proper application of the various operations of culture above mentioned, will, in a short time, complete the amelioration and improvement of the most stubborn soils ; and such soils when so improved will be found to produce excellent culinary crops.

The improvement of sandy soils is a very different matter, as regards the details ; for though, in their case, thorough drainage and deep trenching are indispensable, yet instead of adding porous materials, those of an adhesive quality are required. Neither do any injurious results follow from operating on soils of this class when in a wet state, or rather soon after they have been wetted, for the ready passage they afford for the water soon renders them comparatively dry. To improve the texture of such soils, what is known as stiff or heavy loam, and marl, should be applied, and in quantity just proportioned to the degree of sandiness of the original soil. To such soils, long littery dung should never be applied, as it would tend only to make them still more porous, from which cause they are at all times liable to suffer during the hot dry weather of summer. They are much benefited in summer, during continuous drought, by the occasional use of various saline manures, diluted and applied in a liquid state, for these have a material influence in keeping them in a moistened condition. It will thus be seen, that the improvement both of heavy and light soils for gardening purposes, consists in assimilating them as near as possible to the free open loamy soils, already stated to be the best natural soils for the purpose.

Disposition of the surface.—The more simple the arrangement of a kitchen garden, the mo convenient will it be found in the subseque cropping of the ground. The exact dispos tion of the surface, that is, the position ar number of walks, borders, vegetable quarter &c. must depend on the form and size of tl area. If it be a square or a parallelogran (the two most convenient forms,) a walk shou extend round it at a distance from the wal proportionate to the size of the garden ; an if the garden be of considerable size, anoth should lead through the centre, and may l once or twice intersected, if the space is e tensive enough to render these means of com munication necessary. The borders next tl fence extending all round, should be at least wide as the height of the fence, or they ma be wider ; thus, if the wall is ten feet hig the border may be twelve or fifteen feet wide and even if the fence be a low one, it shoul not, if there is space, be less than from six t ten feet wide. These borders according t their aspect are exceedingly convenient fo accelerating or retarding particular crops. Th walks should never be less than three fee wide in small gardens, and are better six o eight feet wide, if there is room.

The border all round next the fence, an the walk next to it, being set off, the size o the central portion of the garden must deter mine the necessity of having a central walk If, after the central walk is set out, ther would remain about forty feet in width o each side between it and the boundary wall already spoken of, it would be convenient t have one formed ; but if the space would b much less than this, it would not be necessar on the ground of convenience, and would onl be wasting some of the best part of the ground This, therefore, it will be seen, is a mere poin of taste and convenience ; but generally it wil be found that a central walk is not necessary.

The area of a kitchen garden thus become divided into four parts :—the wall border, th gravel walks, the vegetable quarters, and th narrow borders between these and the walks The wall borders should slope slightly toward the walk, from what is to be the ground leve at the base of the wall; they should never b occupied with heavy or deeply-rooting crops that draw much nourishment, as this woul impoverish the roots of the fruit trees, whicl are frequently the most valuable part of th garden stock. It is not desirable to dig ver deeply, for fear of injuring the roots of th trees ; and whatever crops are planted, shoul be placed at more than the ordinary distanc apart, so that they may not shade the ground too much. A slip of a foot wide, next the wall, forms a capital situation for planting a row of cauliflower plants for preservation through the winter, and a row of lettuce plants in front of them; the former are removed to be planted out in spring; the latter being a light crop may be allowed to grow. Next to this, a clear space should be reserved as an alley or pathway, which is necessary in order to carrying on the management of the trees; this should be at least two feet wide. The gravel walks should be edged with dwarf box, and should be nearly level—a little raised or rounded in the centre, but not too much, as very much rounded walks are unnecessary, and inconvenient to walk on. If box edging is objected to, as it is by some, on the ground of harbouring slugs and snails, (an objection, by the way, which has little force, if the edgings are, as they ought to be, kept neatly trimmed,) wood, brick, stone, slate, or glass edgings may be substituted. The border on the opposite side of the walk from the wall, may be narrow,—from three to five feet is sufficient; it is useful for many purposes, such as raising salads, planting herbs, sowing seeds for transplanting, &c., or it may be filled in rotation with such crops as strawberries. Between this border and the vegetable quarters, a row of fruit trees is usually planted; this may be a row of gooseberries and currants, of raspberries, of dwarf apple and pear trees: or apples, pears, and plums trained as espaliers; or, as we prefer, dwarf standard pears and apples trained in the balloon fashion, alternating with gooseberry and currant bushes. The latter two may be trained as dwarf standard trees, and are thus not only better preserved from the splashing of heavy rains, but are more easily covered up for preservation from birds, as is desirable with a portion of the crop; indeed some, of the currants especially, if well matted up, may be kept till Christmas in favourable seasons. The vegetable quarters within the row of fruit trees, should have a narrow pathway or alley all round for the convenience of workmen, and for getting from one crop to another. Temporary alleys for the same purpose may also be formed between the crops at the time of planting them.

To be complete, every garden should have a supply of water available for the plants, without the labour of watering; this is to be effected by having an elevated reservoir constantly supplied, and attached pipes leading round the walls, and provided with the necessary stopcocks. A leathern hose, and the labour of a man to direct it, is then all that is required for watering the crops.

HOT-BED DEPARTMENT.

Few, if any, gardens can be managed without hot-beds, and where hot-beds are employed, a special situation should be devoted to them, for at best they have a littery and unsightly appearance, which makes it extremely undesirable that they should be made openly in the kitchen garden. When a separate fenced-off department is devoted to them, their unsightliness becomes of little importance, while all their advantages are better secured, and the management of them is rendered more convenient

Such a department as is here alluded to is commonly called the frame ground. Its extent will be regulated by the amount of business required to be carried on in it; but it is well to provide space enough, for many untidy operations may be carried on here better than in any other place, and with less disturbance to the order of the garden. It is convenient to have the frame ground near the potting sheds and yard; in fact, it may form part of the latter. A warm sheltered situation should be selected, open to the sun on the south and east, and entirely without shade at these points, but well protected on the north and west, as well as on the north-east. The space should be well drained, and made dry and firm for walking on. Excavations from a foot to eighteen inches deep should be made to build the beds in; by this means the drainage from them may be more easily collected, and they are, besides, less exposed to the influence of winds, which have much effect on hot-beds, causing the heat to fluctuate often to a very great extent. These excavations should range in regular order from east to west, so that the beds may face the south, (or north if a shady bed is required). They should be about three feet wider than the hot-bed is required to be built, which will leave eighteen inches at front and back as a base for the linings or casings of hot dung which have to be applied subsequently to maintain a proper heat. The width of the bed should be just a few inches wider than the frames; that is, as nearly the size of the frame as will admit of the latter standing quite firmly on it. Garden frames are usually made about five feet wide, so that the excavation should be about eight feet in width; the edge of this should be formed of stout plank, kept in place by short piles driven into the ground, the upper edge being level with the walk; the bottom should be drained and made to slope to the centre, and also slightly towards one end, at which a cesspool should be formed to receive all the drainings of the dung, which may be turned to account as liquid manure. The space between the excavations may be two feet wide, quite level and firm. Where dung pits are used instead of hot-beds, they should be built in excavations of the kind here explained, for the same reasons; but where hot-water pits are substituted for them, they may be built on level ground. The highest beds or pits should be placed at the north side of the ground, so as not to shade any of the others.

THE ORCHARD.

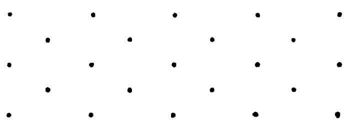
There is so little difference in the conditions necessary to form a good orchard and a good kitchen garden, that what has been said with reference to aspect, soil, and preparation, in the one case, is also applicable in the other. An orchard may be enclosed by a wall or other substantial fence suitable for training the tenderer kinds of fruit against, but it is more usually enclosed by a low fence and hedge, the walls of the kitchen garden affording in most cases what is regarded as sufficient accommodation for the finer kinds of fruit. The question is simply one of expense. When the cost of building a wall, and of preparing for and properly looking after the trees, is not an objection, such an arrangement would be in perfect accordance with the objects of an orchard. In this case, however, the smaller kinds and the dwarf trees only should be planted nearest to the wall, in order that the latter may not be shaded; neither should any be planted within the distance of an ordinary fruit-tree border.

Low, damp, or what are called early situations, are very unsuitable for orchards. Each of these favour early growth in spring; and it is the early development of the blossoms while they are still liable to suffer from severe "spring frosts," and are unprotected by foliage, in which lies the greatest risk of losing the fruit crop. An elevated and comparatively backward situation is therefore an essential condition of success.

Wherever standard fruit trees are grown, an orchard of greater or less extent ought to be provided for them, for nothing is worse than to have such trees growing in the vegetable garden among the culinary crops; it prevents either the one or the other from attaining their proper perfection, the vegetables being injured by the continual shade of the fruit trees, and the latter suffering both from the repeated diggings which are required, and also from the amount of manure which is necessarily applied to the former. The orchard may advantageously be situated near the kitchen garden, and if it can conveniently be placed on the exposed side, it may serve as a means of shelter.

Another general consideration is this:—Few soils are adapted to grow every kind of fruit to perfection, and the wholesale renewal of the soil to render it adapted for each kind of tree is too expensive an operation. All that can be done is to approximate as nearly as possible to what would be desirable in this respect by partial renovation, and to plant chiefly of those kinds of fruit for which the soil is most suitable, and limit the number o those for which it is not adapted.

The trees in an orchard should be plante in quincunx order; that is, they should stan in lines, the plants in one line alternating laterally with those in the next line, or standing opposite those in the second line, thus:—



This arrangement, while it occupies the ground to the best advantage, also secures the largest possible space on all sides for each individual plant. In fact, this is the principle on which all crops, whether of vegetables or fruit, should be planted. The trees must not be indiscriminately mixed; it is better to select the strongest growing kinds of trees, and have these planted together at greater distances apart, the smaller growing kinds being also planted together, and, if required, somewhat closer than the others. The larger growing trees should not be planted at less than forty feet apart, and the smaller ones in proportion. Where there is space, however, it will be better to plant them at greater distances, in order to secure a free circulation of air on all sides of the trees. They ought at all times to stand quite clear of each other, so as not to be in any degree crowded or materially shaded.

Fruit trees are some years arriving at perfection, and, consequently, it is very important that not only should a good selection of kinds be made and planted, but also that these should be obtained quite true to name. Too little attention is paid to this matter in many nursery gardens, and grievous have been the disappointments of detecting spurious fruits after several years of anxious cultivation. Hence it is infinitely better, though at a higher cost, to ensure, as far as possible, that the kind selected are true to their names. It is by no means desirable to very much extend the number of varieties to be planted; a good and limited selection adapted to furnish a proper succession from the extreme beginning to the end of the season being more advantageous in every respect than the mere possession of a very extensive collection of varieties. When, however, many kinds are required to be cultivated as a fancy, several may be grafted together on one tree; in this way they will succeed well enough, if those of similar habits are placed together. Where it is found that spurious varieties have been planted, it is better to change them by grafting or budding the growing trees, rather than to have recourse to replanting.

THE KITCHEN GARDEN.

Sow artichokes, basil, beans, cabbages, carrots, cauliflower, lettuces, marjoram, onions, parsley, peas, radishes, salading, and spinach.

Plant and Transplant artichokes, cabbages, horse-radish, shallots, and potatoes.

General Directions.—This is a proper time to improve light and heavy soils, by mixing the former with that of an adhesive nature, and the latter with sand or lime rubbish. Trench, dig, and in frosty weather do [illegible] necessary wheeling. Collect into heaps all the vegetable refuse to make manure, sprinkling the heap with a little salt, or lime, to assist decomposition, and to destroy the larva of insects. Turn gravel walks, and plant box-edgings ; prepare stakes and labels; destroy vermin, such as mice. Stir the soil between crops, in dry weather, and draw a portion of fine earth about the stems of the advancing crops.

Artichokes (*Globe*).—Sow on a slight heat, about the end of the month, and forward by pricking them into boxes or pots. These will come into use late in autumn ; protect the old plants.

Artichokes (*Jerusalem*).—Plant any time during the month, on deeply dug and richly manured soil ; put them five inches deep, and eighteen inches apart, in rows three feet or more from each other.

Basil.—Sow a little in a hot-bed frame, towards the end of the month.

Beans.—Plant a small quantity towards the end of the month : select a dry and warm spot, putting them in rows two feet between, and three inches apart : either the Mazagan or Marshall's Prolific will suit.

Brocoli.—Look over the stock, and protect those which are showing flower, by breaking a few of the inner leaves down upon the heads before they are far advanced.

Brussels Sprouts.—Support the tall plants with stakes, and let the sprouts be picked carefully, as wanted.

Cabbage.—Plant from those pricked out, in autumn; sow also a few for succession.

Carrots.—Sow a few for early use in a slight hot-bed, or on a sunny spot, hooped over, so as to be covered with mats in severe weather. Look over those which are stored, and pick out any which are beginning to decay.

Cauliflowers.—Shift those in pots; give plenty of air to all that are under glass; clean and stir up the soil; make a sowing on a slight hot-bed, at the end of the month; and in severe weather give extra coverings.

Celery.—The late plantings may be again earthed up in mild weather, and the whole must be covered with litter when the weather is severe.

Endive.—Look over all that is kept in frames and cellars : pick off decaying leaves ; give no water, but plenty of air, and keep them as dry as possible.

Garlic.—Plant out now, if not already done, in rows fifteen inches between, and six inches apart in the row; shallow drills may be drawn for them, but they must not be covered, only pressed on the soil.

Herbs.—The perennial sorts, such as mint, thyme, balm, tarragon, &c., may be increased by division if required.

Horse-radish.—Make new plantations; in doing this, trench the soil three spits deep, put plenty of manure at the bottom, plant cuttings of the roots eighteen inches deep, in rows two feet apart, and nine inches in the row: this is better than making holes.

Lettuces.—Sow a few, by the end of the month, on a warm border, or on gentle heat. Those in frames and hand lights, or by the side of the wall, require looking to; have the dead leaves picked off, and the soil freshened; in mild weather give air plentifully.

Mint.—Plant some roots in pots or boxes, and set them in a forcing-house or hot-bed frame, where the heat is moderate.

Onions.—Sow a few on a very warm spot; clean the autumn sown crops. Plant out some of the small roots, such as are used for pickling, they will be found very useful; put them about five inches between, and the rows one foot apart. Look over those which are stored; clean them thoroughly, and in doing so handle them very gently.

Parsnips.—Prepare to sow early; deeply dig or trench the ground; attend to those stored in the autumn.

Parsley.—This is a considerable time in vegetating; if the ground is dry it should be sown now, in rows fifteen inches apart, or along the edges of the alleys. Take up a few of the best roots, and plant them in a frame near the glass, as provision for severe weather.

Peas.—Sow a crop of the Early frame at the beginning and end of the month, on a dry border, in rows a yard apart; or, what is better, along the bottom of the wall. To saturate them before sowing with bitter aloes, is said to be a complete preventive against the attacks of mice. Protect the autumn sown crop by close twiggy stakes.

Potatoes.—Keep those which are stored thin and cool, and pick out any diseased ones. Plant out some of the early sorts (the late ones may also be tried,) on a dry and sheltered spot, using whole potatoes for sets; put them in rows two feet between, and one foot in the row, and instead of dung, use leaf mould, and charred earth, or refuse.

Radishes.—Sow a few on a warm border, protected by mats, loose litter, or other light material: well air those in frames.

Saluding.—Sow a little towards the end of the month, as mustard and cress, on a warm sheltered spot; protect it from the wet a severe cold.

Savoys.—Preserve any that come ve good, and plant them in a warm place, f a supply of seed.

Spinach.—If much in demand, sow a litt on a warm sheltered border, to come in su cession; stir the soil, when dry, between th advancing crop, and keep it clear of weeds when picking it for use, gather only the fu grown leaves.

Winter Crops.—Keep them clean b removing all the decaying leaves, &c. I any of the sorts are proving themselves t be true, and coming very good, it wil be well to plant out a few of the best fo seeding.

THE FRUIT GARDEN.

General Directions.—Collect all prunings &c., and have them charred for manure Fork up those places where the soil has bee trodden down whilst pruning and nailing Trench and drain the ground where youn trees are to be planted, and in all cases avoi deep planting; as a general rule it is bette to plant without making any pit, but to spread the roots over the surface, and cover them with fresh soil. It is a good plan, previously to nailing the peach and other fruit trees, slightly to paint the walls with a liquid mixture of lime and sulphur in equal proportions; soap suds and urine will be good additions to the composition. A similar mixture applied in a weak state to trees which are mossy and dirty will serve to cleanse them. Lay in a store of stringed and other labels for use at grafting time, &c.; clean old nails by shaking them briskly in a bag of sand, and always heat them and dip them in oil before using; prepare shreds; and the fewer nails and shreds used in nailing the better. Have the necessary protecting materials for the early blooming kinds in readiness.

Almonds.—Finish pruning and nailing; the buds may be thinned at the end of the month with advantage: keep the standards thin of wood in the centre, and regularly formed.

Apples.—Get on with the pruning, tying, nailing, and planting; avoid planting deep; and stake and mulch those already transplanted.

Apricots.—Prepare protecting materials, as netting, matting, &c., to be applied when the blossom is about to open; finish pruning, nailing, and planting.

Berberries.—If the fruit is much used, plant a few in a deep and rich soil; they are very ornamental in shrubberies, whence the fruit may be gathered.

Cherries.—Finish pruning and nailing immediately those on walls, &c. The Morello may be left until the last, as it is very late; protect all in blossom.

Chestnuts.—If introduced at all, they must be planted around the outskirts, where they will serve for shelter.

Currants.—Propagate all the best sorts; make new plantations when required; finish pruning; and, when digging, add a portion of well decomposed manure.

Filberts.—Finish pruning; form them into open bushes, as practised with the currants: the trees may be cup-shaped.

Figs.—It is presumed these are well covered; more covering may be added if the weather is severe.

Gooseberries.—Complete the new plantations, and finish pruning; break off (not cut) the suckers; have the ground dug and manured; put in cuttings of the best sorts, a foot in length, and insert two-thirds in the soil, leaving only three eyes at the top, all the rest being cut away.

Grafts.—Those which had to be taken off early, or have been procured, may be preserved fresh by thrusting them half-way in damp sand or soil, or into a potato.

Medlars.—Thin out the irregular branches of established trees, keeping them open in the centre, to admit light and air.

Mulberries.—Prune so as to leave the centre open, without crowded or crossing branches.

Nectarines.—Prune, nail, and thin the buds towards the middle and end of the month; prepare to protect the blossom. It is a good plan to use a board, to project at the top nine inches, to which the awning may be attached.

Peaches.—If the buds swell fast finish the pruning, thinning of buds, and nailing, early; prepare materials, as netting, and have a board along the top of the wall to ward off more effectually the frost and wet, to protect them when in blossom.

Pears.—These may be planted; prune and train those on walls or espaliers; stake and mulch those recently transplanted. Young trees must be cut sparingly, as it induces too vigorous growth. Several of the French sorts bear best on the young wood, and may be treated accordingly. Keep the standards well thinned of wood.

Plums.—Prune and train, laying in a moderate quantity of young wood, the fruit being better thereon than on spurs.

Quinces.—These may be now planted. It is usual to graft pears upon the quince stock; and it is desirable to have a few thus done, as they come earlier.

Raspberries. — Make new plantations; prune, tie, and dig the old plantations, adding a portion of manure; dig out all the suckers not required.

Stocks for grafting upon should be propagated by layers, seeds, and root cuttings; those from root-cuttings and seeds are preferred: root cuttings are best.

Vines may be planted; prune and train as soon as possible; this, in some degree, will prevent bleeding.

THE FORCING GARDEN.

General Directions.—In watering, always use rain water warmed to the temperature in which the plants are growing; this can be done by keeping the engine and watering cans filled over night, or by mixing with warm water. When giving air, avoid causing currents, and only admit it by the top ventilators, and that early in the day; shut up early, so as to have the house warmed as much as possible by sun heat; it will be all the better if the thermometer rise a few degrees after the air is taken off; these instruments should be used in every department, although the experienced can do without them. In dull and severe weather it is sometimes necessary to make fires during the day, when a little air may be given. It is not advisable, when the weather is extremely cold at night, to keep up the exact heat required, as a few degrees lower will do; but it must be kept nearly right during the day, particularly when the plants are in blossom. Give all the houses a thorough cleaning before forcing is commenced. All forcing-houses and pits should be covered at night, to economize fire heat, excess of which is both expensive and hurtful.

Asparagus.—Temperature, 55 degrees by day, 50 degrees at night. Take every advantage of sun heat; give a little air daily; shut up early; and water with tepid water, a little salted: prepare a succession bed.

Cherries.—Temperature, from 45 to 50 degrees by day, 40 degrees at night. Admit air freely until the trees come into blossom; great caution is then necessary. Keep the atmosphere steady and moist; use little fire heat at night, but apply it during the day in dull weather, always giving a little air at the same time.

Cucumbers.—Temperature, 70 degrees by day, 65 degrees at night. Those in houses should be syringed freely with clear soot and manure water. Train always on a trellis, and stop at every joint when established; see that the steam of dung linings does not enter the frames; cover carefully at night.

Figs.—Temperature, 50 degrees by day, 45 degrees at night. Syringe often; use tepid liquid manure when they are growing fast. Those in pots should be brought on gradually, and can be ripened in the stove or vinery.

Kidney Beans.—Temperature, 60 degrees by day, 55 degrees at night. Sow either in a box or pots, to be transplanted, as soon as vegetated, into four-inch pots, and again shifted into eight-inch pots, placing four plants in each: place them near the glass, say in the peach house, or vinery, upon shelves.

Melons.—Temperature, 60 degrees at night, 75 degrees by day. Sow a few seeds; pot off those for planting out next month, one plant in a pot, and stop it at the showing of the third leaf. They can be planted out, or kept in pots, and grown as vines: in this case, allow them to run a little before stopping them.

Mushrooms.—Temperature, 55 degrees, chiefly raised from the fermenting dung being prepared in the house, for the succession beds. In watering, use tepid water, and apply it very moderately: exhausted beds may be partly renewed by applying liquid manure.

Musas.—Temperature, 60 to 70 degrees by day, 55 degrees at night. Keep the atmosphere moist, and water with liquid manure at the roots.

Nectarines.—Temperature, 55 to 60 degrees by day, 40 degrees at night. Stir the soil of the house, and keep the air sweet by waterings; thin the blossom buds, and shake the trees when in blossom, to assist impregnation; give air freely when mild, and close early in the afternoon.

Oranges.—Temperature, 45 to 50 degrees by day, 40 degrees at night. Water and syringe moderately, and in the mornings. Those in pots infested with worms should be watered with lime water.

Peaches.—Temperature, 55 to 60 degrees by day, 40 to 45 degrees at night. Syringe freely in the forenoon, until the blossoms open, when it must be entirely withheld; shake the trees to disperse the pollen; freshen the soil, and maintain a moist atmosphere; air freely when mild; always shut up with sun heat, if possible.

Pine-Apples.—Temperature, 70 degrees by day, 60 degrees at night. Increase the heat around the fruiting plants, say to a bottom heat of 95 degrees; water once a week or so; keep the house moist; air, if mild, every day; shut up early, and in severe weather keep the fires on during the day.

Rhubarb.—Place some roots in the mushroom house, where it will come blanched; or cover the crowns with boxes or pots, in the open ground, and surround them with fermenting materials: the heat should not exceed 65 degrees.

Salading.—Sow in boxes, and keep near the light: any of the forcing houses will suit it; old tan much decayed will be found excellent for growing it.

Sea Kale.—Cover up in succession with a mixture of leaves and dung, to the depth of nine inches or a foot; if the crowns are covered with pots or boxes it is necessary to build the material over them; the heat should be mild and regular, about 50 degrees. . slight covering may be put all over the bed.

Strawberries.—Temperature, 55 degrees b day, 45 and 50 degrees at night. These r quire plenty of air when in blossom, an copious waterings when the fruit is set; kee the plants near the glass, in a moist heat either the pinery, vinery, peach-house, or hot pits will suit them.

Steaming.—This practice is not commend able, being quite unnatural; it is better t keep every part of the house moist, whic produces a sweet atmosphere.

Vinery.—Temperature, 50 to 60 degree by day, 45 degrees at night. Syringe ver freely until the vines are in leaf, then increas the heat gradually to 60 degrees, and when i blossom from 70 to 80 degrees by day, and 6 degrees at night. Apply fires during th day, protect the borders outside from wet, an have the stems which are exposed protected.

FLOWER GARDEN AND SHRUBBERY.

Sow hardy annuals in mild and dry weather, in the open ground and in frames; also hardy biennials and perennials.

Plant and Transplant herbaceous plants, trees, and shrubs of all kinds, if the weather is dry, mild, and open.

General Directions. — Proceed actively with alterations, and have the flower borders and shrubberies dug; the surface should be left rather rough, excepting about the plants and edging; all the necessary wheeling of soil, manure, &c. should be done in frosty or dry weather. Trees and shrubs may be pruned at all times and seasons; but the present is especially suitable. Let all the work be done neatly and tastefully.

Slugs are very injurious to many flowers, as polyanthuses, alstrœmerias, &c.; they should be destroyed by laying down handfuls of fresh brewers' grains in the evening, and sprinkling them with hot lime some time after, in the same night.

Alpine Plants.—Wherever the soil about the roots has been displaced by wet or frost, add fresh mould, or replant if necessary.

Anemones.—Plant for late blooming in well drained beds in a soil of loam and cow dung, at a depth of two inches, and six inches apart.

Annuals.—Protect the autumn sown ones, in very severe weather, by inverted flower pots; keep those in frames well aired, so as to have them hardy, and in a fit state to plant out early.

Auriculas.—Water very sparingly, and give air freely in fine weather; remove dead leaves, and top dress with a rich soil; protect from frost by covering with mats, &c. These plants require a dry bottomed frame.

Berberis (Berberry).—Remove the suckers, and plant them in nursery rows for stock.

Bulbs.—Those that remain unplanted should be put in now, otherwise their blooming well will be uncertain.

Carnations.—Keep them in a dry bottomed frame; air freely, and water sparingly; prepare a compound of equal parts loam and cow dung, for the final shift; turn it often, and pick out every insect, especially wire worms.

Clematis, and other deciduous climbers, may be pruned and trained; if cut down to the ground, lay a little loose manure over the roots.

Crocus.—Fork up the soil between these, just before they come above ground, choosing a dry day. Mice are very destructive to the roots, and should be trapped.

Cyclamens.—Freshen the soil among these, and in order to secure their full beauty, they must be sheltered in severe weather.

Dahlias.—Pot any of the old roots that are in danger of rotting; a few of the good sorts may also be propagated, if there is plenty of accommodation; if not, defer it until the end of February.

Erythronium (Dog's-tooth violet).—Plant, if not already done; they must be placed near the edge of the beds or borders either in rows or patches.

Fuchsias.—Cover the roots with litter or rotten leaves; if dry, the standards may be pruned and covered up with straw ropes or spruce branches.

Hepaticas.—Plant in a rich and strong soil: some plants may be taken up and potted for forcing.

Hyacinths.—Stir the surface of the soil when dry; protect with litter, or hoop them over and cover with awning in severe weather; cover those planted singly with a flower-pot inverted.

Jasmines, Honeysuckles, and other shrubs may be increased by cuttings planted in trenches, with river sand at the bottom; when rooted, remove them to where they are required, or plant in nursery rows.

Pansies.—Keep the finer sorts in frames until spring, giving them full air in fine weather; stir the soil and top dress with dung and leaf mould; strew dry litter thinly over those exposed, during severe weather.

Picotees are very impatient of wet; give all the air possible; their treatment is the same as that for carnations.

Polyanthus.—Plant out in well drained and rich borders or beds; sow seeds in pans in a cold frame.

Primroses.—Have a few plants in pots, especially of the double flowered kinds, which, if top dressed now and placed in a frame, will bloom early for the show-house.

Ranunculus.—Plant six inches apart, in loam and cow dung; press the tubers gently into the soil, and a little sand may be placed under them; drain the bed thoroughly.

Roses.—Remove entirely those shoots which can be spared, and shorten others; balance well the heads of standards, and secure them by stakes. The final pruning must be deferred until the severe frosts are past; protect the tender sorts in severe weather with dry moss at the roots, and dry material, as broom, fern, spruce branches, or withered laurel boughs; they must be plentifully manured with cow dung, and require a strong loamy soil on a dry subsoil.

Stocks.—Sow a few of the German sorts in heat, for early blooming; pot off carefully the first seedlings which vegetate, as these are proved to produce the greatest proportion of double flowered plants.

Snowdrops.—Stir the soil as they appear, which gives it a degree of freshness and neatness that much increases the beauty of the flowers.

Tulips.—Protect from frosts, and cover with water-proof cloth in wet weather.

Violets.—Some of the Russian variety, planted on a south border, and slightly protected, will furnish a supply of blooms. They are impatient of wet

Wallflowers. — Plant them in masses throughout the borders, &c., where they will be easily removed when past blooming; the soil should be enriched with manure, as annuals or other plants must come in their place by and by.

WINDOW GARDENING.

Bulbs, to be had in flower now, must be obtained from the forcing-house; avoid keeping them in a draught of air, and water only with tepid water; introduce few at a time. Put a little salt in the water for those in glasses, which does not require changing.

Begonias will now be quite dry and at rest; repot a few of those which were early ripened, and excite them to grow by placing them in a gentle heat.

Camellias must be very carefully and regularly supplied with water, and that only when the soil feels dry.

Cinerarias are well adapted for the window, although not often seen there; give them all the light and air possible, little or no heat, and plenty of water.

Evergreens, such as aucubas, laurels, laurustinus, sweet bays, junipers, daphnes, hollies, &c. should be provided in pots for the winter decoration of the balconies, &c.; they require very little water, or any attention this month; but in very severe weather all should be protected or housed.

Fuchsias, being dormant, must be kept nearly dry; prune in the side shoots, and be ready to start a few at the end of the month.

Geraniums.—Protect from cutting winds; give as much air and light to the plants as possible. The varieties called Alba multiflora, Napier, and Colleyanum, are amongst the best for forcing into early bloom, and of the scarlet sorts none is better than the Tom Thumb, a dwarf growing sort.

Myrtles, and other evergreens, must be kept cool; syringe them in fine mornings, as they are sure to get dusty, which is unsightly.

Roses.—Unless they are in a growing state water very little; moss over the pots of those in flower; apply tobacco liquor or snuff to those infested with green-fly.

Primulas are very impatient of water and damp; the soil should be chiefly leaf mould, with a little sand and loam, and well drained.

Violets, removed from the frames, will now be scenting the room; keep them near the light; frequently stir the soil in the pots, and remove all decayed leaves and flowers; admit air profusely.

Wardian Cases.—These interesting appendages must, if situated near the window, be protected or removed at night during frosty weather, but give them as much light as possible during the day. From 40 to 50 degrees will suit the generality of plants grown in them. They will require no water. Pick off every decaying part as soon as it appears; also stir the surface of the soil occasionally, to avoid any tendency to mouldiness or damp.

PITS AND FRAMES.

Alpines.—These should be plunged in coal-ashes or old tan, and either hooped over and covered with awning to protect them from wet and cold, or placed in frames facing the north; they must have plenty of air.

Annuals.—Towards the end of the month, sow in a hotbed a few seeds of the principal tender sorts for pot flowering, such as amaranths, balsams, browallias, cockscombs, Thunbergias, &c.:—Some of the half-hardy kinds, as cobeas, lophospermums, maurandyas, mignonette, schizanthus, schizopetalon, lobelia, &c., may also be sown in a slight hotbed; but unless ample accommodation can be provided, it is better to defer sowing until next month.

Half-hardy Plants, such as calceolarias, fuchsias, petunias, verbenas, and other bedding out plants, require to be kept dry and clean: give them all the air possible in mild weather: water in the morning. Put a few of the better and rarer sorts in the forcing-house to produce cuttings. When the weather is very severe, and the frost penetrates through the coverings, let them remain covered until they are thawed; thus the plants sustain comparatively slight injury.

Forcing Plants, such as roses, azaleas, rhododendrons, lilacs, deutzias, &c., together with the various bulbs, as hyacinths, tulips, narcissus, amaryllis, jonquils, &c., may be brought on in early vineries, peach-houses, &c., but it is better to have pits or a house, exclusively for them, which should have bottom heat supplied by some means. The points necessary to attend to are these:—To secure well ripened plants, and to have them well established in the pots; to place a few at a time in heat, and to apply it gently and gradually; to use tepid water always; to give air regularly, and shut up early, keeping the average temperature at 60 degrees by day and 50 degrees by night; to keep all the plants free of insects by fumigating for green fly; and maintaining a moist atmosphere, and so preventing red spider, &c. Should they become infested, slightly paint the flues, or pipes, with sulphur while they are cool, which will kill the spider and tend much to keep away other vermin. It is a most excellent plan, although not generally adopted, before forcing or even growing plants in the pits or houses, to cleanse them by burning within them a quantity of rags dipped in sulphur, taking care to have the places quite closed and to allow no means of escape to the adjoining ones. The plants must of course all be removed previous to this being done.

Violets.—The Neapolitan variety is the best for frames; they must be well aired, and kept near the glass: they are very impatient of wet; a slight heat (45 degs.) will keep them blooming; frost must not be suffered to reach them.

THE GREENHOUSE.

Temperature.—From 40 to 45 degrees by day; 35 degs. to 40 degs. by night.

Ventilation.—Admit air every day if mild: apply artificial heat during the day in damp or severe weather, and ventilate at the same time, taking care that keen winds do not enter; cover at night with an awning or mats.

Watering.—Let the water used be a few degrees warmer than the temperature of the house; apply it in the forenoon: keep the plants rather dry than wet, but never allow them to flag; look over them daily.

Potting.—Towards the end of the month, such plants as were designedly kept in store and small pots, may be selected and prepared for potting; get all the pots washed and dried, and the soil prepared and warmed to the temperature of the house.

Dressing.—Take off all the dead leaves as they appear; stir up the surface of the soil, and make it rather highest in the centre.

Staking and Labelling.—Before the busy season arrives, get all the decaying tallies renewed; also a supply of stakes and labels prepared.

Insects.—Make it a rule to fumigate, as soon as green fly is seen; also to wash such plants as have become dirty, at the first opportunity.

Aloes, and succulents of this class, must be kept dry at the roots; remove the water that collects at the base of the leaves: they will be found to do with very little light, at present.

Agaves, and large succulents, require little water: and that which collects at the base of the leaves must be removed to prevent their rotting.

Alströmerias may yet be potted in six-inch pots, and placed in a cold frame: give them a loamy soil, adding a third part of peat, and well decomposed dung, with a little silver sand.

Amaryllis.—Pot afresh in loam, with a third part of leaf-mould and some sand: start them with a slight bottom heat; only part should be done now, so as to make a succession.

Annuals, as humea, clintonia, schizanthus, brachycome, &c., should be kept in a cool place near the glass, and carefully watered.

Azaleas, will be coming into bloom; retard the late sorts; a little liquid manure just before they expand their flowers will assist them; keep them with the heaths.

Calceolarias.—Those wanted to flower early, should be shifted early, or not at all; give them loam and peat in equal parts, adding a good deal of silver sand: place them close to the glass, where there is a free circulation of air; water moderately.

Camellias must be kept cool; remove a few of the plants to a warm house to expand their blooms; water very carefully.

Cape Bulbs, as ixias, sparaxis, gladiolus, &c., should be placed to receive a gentle heat, and plenty of light; some may remain in a cold frame: pot a few more of the reserved bulbs, and reserve others to make a final planting next month.

Cephalotus follicularis (New Holland pitcher plant) requires an intermediate temperature; if the house is not kept close, it must be covered with a bell glass, and kept moist: plant a little lycopodium, or common moss around it, keeping it neatly clipped in the centre about the plants, where it must be kept perfectly clear.

Cinerarias.—Keep these in a cool house or frame; shift them in succession, using a rich loamy soil, one-third of leaf mould and one-third cow dung, with a little sand. When large specimens are wanted, keep shifting them as they fill the pots with roots; confine the roots of those required early in flower.

Chrysanthemums.—Cut down as they finish flowering, and put them into a cool place where they will have light, and be free from frost.

Crassulas, and allied plants, must have very little water. The Kalosanthes may be shifted by the end of the month into equal parts of loam, sand, and peat.

Cyclamens.—Pot off seedling plants, and incite them to grow by placing them in the stove near the glass; use a compost of loam, leaf mould, and cow dung, in equal parts, with a little sand: also keep the old plants a little warm, and water the whole.

Epacris.—Bring these successionally into bloom, by placing the most forward in a warm situation.

Ericas.—Give a free circulation of air, both night and day when mild; if severe weather prevails cover the house or frames at night, and use no fire heat if it can be avoided; they must be carefully watered.

Fuchsias.—Those wanted early should be put into a moist heat and pruned close in; give the resting plants but little water. Propagate approved varieties, which if struck early in heat, will make excellent specimen plants the same year.

Gompholobiums, and other slender creepers, must have trellises timely put to them; they flourish in sandy peat soil, and require perfect drainage.

Haworthias, and those of this class, require little or no water; keep a dry air circulating among them; also stir the soil in the pots.

Helichrysums, and Cape shrubs, must be kept in a cool and airy place, with plenty of light; water sparingly; bring them to a proper shape by tying them out, before the growing season commences; the stakes used must be as few as possible, and put in uniformly, and the ties made so neat as not to be much seen.

Leschenaultias, must have a light and rather warm place; attend to training and stopping the shoots (when growing), to make them compact and bushy.

Lilium japonicum (Japan lily). — This and the whole of the lilies require a rich turfy loam, with a little sandy peat, and plenty of pot-room. They should be potted immediately if not already done, and kept in a cold frame: in potting them leave about one-third of the space to be filled up with soil, as they grow.

Mignonette in pots must be kept cool and near the glass, and should have little water, and plenty of air. The caterpillars make great ravages on the young plants if not destroyed; the best remedy is hand picking.

New Holland Plants, as acacias, hoveas, bossiæas, &c., should be treated nearly as the heaths: bring them successively into bloom, by moving them to a warmer house; give plenty of light and air, and stop those which are sending up strong shoots.

Orange trees.—Keep these in a cool and almost resting state; a few may be brought into flower, by putting them in heat; if those in tubs are disturbed by worms, water with lime water.

Oxalis.—Pot any reserved roots in a soil of loam, leaf-mould and peat, equal parts: those potted in autumn, and kept in frames, may be brought into flower, by putting them into heat, and keeping them moist.

Pelargoniums. — In severe weather use coverings at night to avoid much fire heat: in mild weather give plenty of air through the day; stop the shoots of plants intended to flower in the summer months; every shoot on the plant should be stopped at once; tie out and keep the lower shoots well down, that the pot be almost covered with leaves. Guard against the attacks of insects, of which the green-fly is very injurious.

Primulas are impatient of moisture; they like a compost of two-thirds of leaf mould, one of loam, and a little silver sand. The double kinds are best; these increase by cuttings; pot a few seedlings to keep up a succession of flower. Choose the largest and finest coloured kinds to grow as specimens.

Proteas, Banksias, Dryandras, &c. must be kept in an airy situation, and but little water must be given them.

Rhododendrons.—Put a plant or two of the most forward occasionally, into a gentle heat, to bring them early, and keep the general stock cool, and moderately watered. A few might be brought in from those out of doors, and potted in loam and sandy peat, equal parts.

Roses should be fumigated whenever green-fly is seen, or else syringed with tobacco water. For the forcing plants the heat should be about 55 degs. during day, and 50 degs. by night; allow the others to rest, and give air freely.

Salvias.—Cut these down when they are past blooming; they require an intermediate house to flower in, at this season: gently excite those which have been resting. The whole family require plenty of pot room, and a rich soil: apply water sparingly to such as are at rest.

Stapelias.—Give these very little water: clean any that may be infected with the scale insect, and keep them in a dry and moderately warm place.

Tropæolums should be potted immediately if not done in autumn, in soil of equal parts sandy loam and peat; adapt the pots and trellis to the size of the bulbs and kinds. In training carry the shoots to the top first, take them right over and back to the bottom, afterwards make good the deficient parts.

THE CONSERVATORY.

Temperature.—55 degrees by day, and 45 degrees by night; make an allowance of 5 degrees according to the weather.

Ventilation.—Admit air cautiously, and let it be only by the top sashes; avoid currents, which will do injury to all the plants, but especially the forced ones.

Watering.—Plants, when in flower, require more water than at any other time; such must, therefore, have enough, but avoid deluging them, and always use the water two or three degrees warmer than the temperature of the house. Those which are planted out will require little or no water until the end of the month.

Arrangement.—This feature is equally important with good cultivation. Aim at giving *effect* from the principal view or entrance, as the first impression tells most. Avoid an over-neatness and clipped appearance in the plants. Study to make the colours contrast against the green foliage; for although, as in flower-gardening, the grouping and arranging of the cold and warm colours cannot be fully carried out, yet much may be done by selecting the most handsome and showy plants, and placing them in conspicuous positions, without destroying the general harmony. These, during this month, should be such as salvias, gesneras, camellias, oranges, azaleas, gardenias, rhododendrons, roses, &c. Re-arrange the plants at least once a week, altering their positions so as to give the house a new phase; those plants which were at their best the previous week, must be placed in secondary situations this, and so on. Maintain an orderly and neat appearance.

Routine.—Next to arrangement is cleanliness; every morning go over and pick off all decaying leaves and flowers, giving each plant a gentle shake, to dislodge any leaves that may be hanging about; these often damage the unexpanded flowers and healthy foliage if not taken away; at the same time remove all the plants whose beauty is past; stake such plants as require it in due time, but the stakes should hardly be detectable. Rake the beds neatly, and sweep the floor daily, damping it previously so as to avoid dust. If the passage is of stone it must be often scrubbed.

Temporary Plants.—This includes all that are in pots. Those which are past bloom, and being removed, should be well treated; the generality of plants, immediately after flowering, make a new growth for the development of flowers the following year; it is therefore of the utmost importance that they should be placed in situations where the young shoots may be developed and fully matured.

Insects.—Every plant that is sent to the conservatory should be perfectly clean, and when any are found dirty they should be removed, cleaned, and returned. This may be effected at times when other houses are being fumigated, &c.; but whilst such opportunities should be taken, they must not be considered as the only mode or means of effecting the purpose.

Amaryllids, and other bulbs should, after flowering, be returned to the warm pits and frames, and have plenty of weak manure water, and all the light possible.

Azaleas.—The early ones may be made still more early by putting them now in heat, so as to forward and mature their growth.

Camellias.—Those whose bloom is past should be taken to the early vinery, or some similar situation, where they will have the shade and heat they require. Proper attention to regulating the period of the growth of the plants, would give Camellias at all seasons.

Climbers.—Thin and cut them in moderately, and wash them if at all infested with vermin, using clear water and a sponge, or soft brush.

Gesnera zebrina.—Keep at the warmest end, and when past blooming allow it to get gradually dry, and fall into a state of rest.

Luculia gratissima.—Give copious waterings, gradually decreasing as the flowers decay: cuttings will strike readily now in a gentle heat.

Roses.—Prune those on the pillars, and when uncovered, the pillars should be thoroughly washed. If there are no roses upon them, some should be procured, such as the yellow and white Banksian, and the Perpetuals; give them a soil of strong turfy loam and dung in equal parts. The China, tea-scented, and Fairy roses, in pots, must be kept scrupulously clear of green-fly, &c.

THE PLANT STOVE.

Temperature.—From 55 to 60 degrees by day, 50 to 55 degrees by night; this structure is usually kept too warm at night, at this season.

Ventilation.—Admit air cautiously, and only in the forenoon, say for an hour, unless the sun is very bright; the thermometer may be allowed to rise to 70 degrees with sun heat.

Watering must be done sparingly, and discontinue syringing altogether; keep the atmosphere moist by often watering the flowers, &c.

Potting.—No general shifting should ever take place; but there are always some growing plants, and those required to be large must not be checked by getting pot-bound; the soil used must be always of the same temperature as that the plants are growing in.

Insects.—This is a favourable time for cleaning the plants; the green-fly and thrip are most effectually destroyed by fumigation; for the scale the plant should be washed first with soap and water, and then syringed with pure water; for the red spider or mite, partially paint the flues or pipes, when they are cool, with sulphur. Clear soot and tobacco water syringings also serve for these ends. It is better, however, to keep up a healthful atmosphere, and have the plants in such a state as to repel the attacks of vermin.

Achimenes.—Towards the end of the month a few of the tubers may be potted in four-inch pots, in a soil of loam, leaf-mould, and peat, in equal parts, adding some silver sand; or they may be put in heat to start, and then potted. See that the resting tubers are not kept in a too cold or a damp situation; they often perish in cold greenhouses.

Allamanda, *Beaumontia*, *Echites*, and all strong growing climbers should be thoroughly cleaned, slightly thinned, and neatly tied up.

Alpinias, *Hedychiums*, and other reedy plants, do well planted out in a very rich soil: of those in pots excite a few into growth; very little water will do until they have made some advance: they are increased by division of the roots.

Aphelandras, *Justicias*, *Ruellias*, &c., if wanted dwarf, will mostly bear cutting down after flowering; they may be propagated from single eyes, and made to flower the following season. Propagate only the good sorts.

Begonias.—A few of the tuberous rooted kinds may be shaken out and potted afresh, and put into heat; use a rich soil of loam, leaf-mould, dung, and sand, well incorporated; those resting must be kept dry. The shrubby sorts now growing must be supplied liberally with water; increase them by cuttings.

Burchellias should be kept cool until next month, unless wanted to flower early.

Cacti.—Most of these must be kept dry. Those coming into bloom should be regularly watered; some should be accelerated and others retarded, so as to make a succession. The *Epiphyllum truncatum*, which will now be blooming, does best when grafted. The *Pereskea acullata*, which is commonly used, is inferior as a stock to *Cereus triangularis* or *C. speciosissimus*. The operation may be performed now; choose a straight stem, from two to six feet high, and graft it from the bottom all around to the top, thus forming a fine plant at once; the grafts should be tied on with damp moss, and kept close and warm.

Cinnamomum (the Cinnamon tree).—Apply water sparingly; towards the end of the month they may be shifted if they are beginning to grow; use a soil of loam, with a little peat and sand.

Clerodendrons.—A few may be put into bottom heat; cut down the old stems to within six inches of the pot, and pot them into rich loamy soil.

Climbers.—Prune by shortening and thinning the branches. These plants, like fruit trees, are often suffered to grow too thick.

Daturas should have plenty of pot room and heat, and a supply of liquid manure just before blooming; towards the end of the month excite a few of the rested plants, and propagate from single eyes, putting them singly into small pots, and setting them in a hot-bed until they have started.

Erythrinas.—If these have been kept in a cool place and cut back, a few may now be taken out and potted in a rich soil, and put in bottom heat.

Euphorbias must be kept rather dry, but never allowed to droop; *E. Jacquiniflora* will continue longer in flower by being kept cool.

Ferns.—Keep cool, and not so moist as at other seasons; they generally like a humid atmosphere.

Gardenias require bottom heat, a moist atmosphere, a temperature of from 60 to 70 degrees, and to be kept near the glass. Repot the young plants for succession.

Gesneras, Gloxinias, &c.—Start a few of those which seem inclined to grow; use a soil of one-half loam, and one-fourth each of leaf-mould and peat, adding a good portion of silver sand; put them where they will have a slight bottom heat and plenty of light; keep the others warm and dry. *Gesnera zebrina* should be gradually dried off, and laid aside to rest.

Hippeastrums, Crinums, Pancratiums, &c.—A few of these should be started in the forcing-house, and have bottom heat; keep those which are in a resting state rather dry.

Hydrangeas, being now forced into bloom, should be set in pans of water; the large plants must be neatly tied out and not crowded.

Ipomœas.—Prune the perennial kinds, and keep them in a dormant state; a few seeds of the annual kinds may be sown late in the month.

Ixoras.—Tie out the branches so as to give plenty of room for the heads of flowers to expand. Some of the earliest may have a little bottom heat, and be placed near the glass; water according to their vigour: they are amongst the best stove shrubs.

Jasminums, Rondeletias, Brunfelsias, &c., unless in a growing state will require very little water; a few of each may be gently forced on.

Lantanas.—Prune back the old plants; give them a moist heat and plenty of pot-room, using a boggy soil; they may be propagated for planting out in summer.

Luculias.—Propagate extensively; they will strike freely in bottom heat; give the flowering plants a good supply of water and keep them cool.

Lycopodiums delight in shade and moisture; this month apply both moderately.

Malvaceous plants require a good deal of pot-room. *Hibiscus rosa-sinensis,* and other shrubby sorts, may be started by the end of the month; also then sow a few seeds of the different annual kinds in a hot-bed.

Manettias, and other tender climbers, are impatient of much water; slightly stir the soil, and when they evince signs of growth, shift them into a soil of sandy peat, and a little loam, and neatly tie them anew.

Melastomas.—Give them more than an ordinary degree of moisture, heat, and pot-room; when they commence growing shift them into a fresh and rich loamy soil.

Melo-Cacti must be kept rather dry, and in an inactive state.

Musas (Plantains).—Keep as much at rest as possible; they must not have the usual supply of moisture; the regular moisture of the house will be nearly sufficient for them.

Nepenthes (Pitcher plants).—Place these at the warm end; surround the pots with moss, and have some of the smaller Lycopodiums growing over the soil and the pot, but not to choke the plants; keep a continual heat arising among the moss, which must be kept moist, and the atmosphere humid.

Neriums.—Keep very cool until wanted to flower, when abundance of moisture and heat must be given; cut down the old unhandsome plants, and when started pot them in a rich loamy soil.

Nymphœas and other aquatics are all the better for being planted within a pan or pot, whether they are in cisterns or ponds; keep the vessels always full of water, making them to run over sometimes so as to clear away any impurities; always apply the water in a tepid state.

Palms.—These must be kept at the warm end; maintain a moist atmosphere, and syringe in clear weather; supply those in fruit with liquid manure in a tepid state.

Polianthes (Tuberose).—Pot these now, if not done in autumn, using pots in proportion to the size of the tubers; use a rich loamy soil, adding a little sand and well decomposed cow dung; put them in a cool place at first, and remove them to a warm situation as they show signs of growth.

Thunbergias.—Allow these to remain in an inactive state; they are very difficult to keep free of red spider; syringe them during periods of sunshine, and keep the air moist: sow a few seeds about the end of the month in bottom heat.

Vincas.—Give a slight bottom heat to the young plants especially, and top the shoots to make compact and handsome plants.

ORCHID HOUSE.

Temperature.—The flowering house from [illegible] to 65 degrees by day, and 55 to 60 degrees night; the resting house from 6 to 10 degrees colder.

Ventilation is not required further than that will take place through the apertures; cover the house at night with awnings, or mats, which renders a less amount of fire heat necessary.

Watering will hardly be necessary, except those which are growing; water must not allowed to remain long at the base of the leaves, and the quantity must be lessened with those that are ripening off; damp the floors moderately every day, increasing a little if the weather is clear.

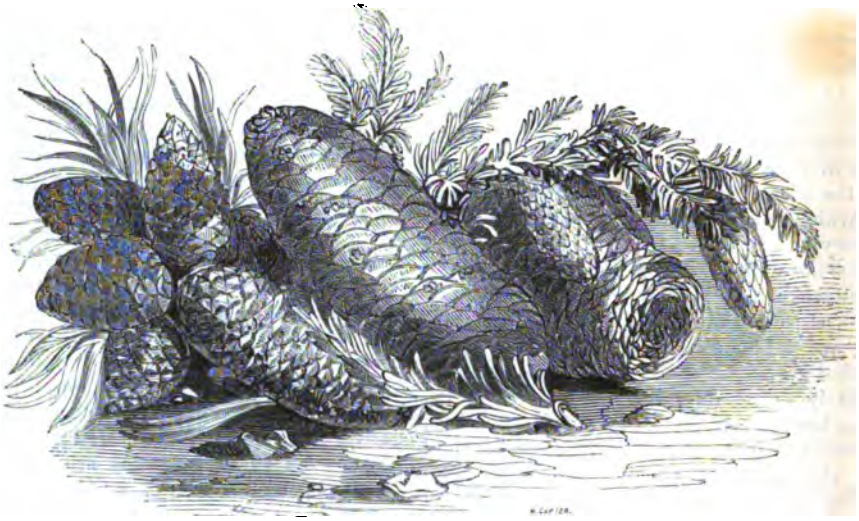
Insects are particularly destructive as the young shoots appear; catch the wood-lice by using bean stalks, or any other hollow stalk, also potatoes cut in halves and hollowed out will entrap them; these traps should be examined every day, and the insects caught destroyed. For the cock-roaches use a composition of spermaceti one-quarter pound, and arsenic two ounces, melted together, and put on one end of a short stick, the other end being stuck in the soil. There are many insects which increase and remain about the blocks and baskets; an excellent way to get at them is to dip the basket almost to the top in the cistern, and allow it to remain for a few minutes, when the insects, in escaping from the water, will be found running upon the surface of the soil.

Potting.—Those plants which are showing early signs of growth, should be shifted: if they have been kept very dry, steep them in tepid water, allowing them afterwards to stand for a few days before shifting them.

Soils.—The Cyrtopodiums, Bletias, Sobralias, Phaiuses, Calanthes, Cypripediums, and such like, will do well in rich turfy loam, adding a little peat. These may be grown in pots, filling the pot half full of drainage, and also mixing with the soil some potsherds or charcoal; plunge them in a brisk bottom heat and keep them so, and well watered, until they have perfected their growth. Those which require baskets are to be well elevated in the pots, as Oncidiums, Catasetums, Dendrobiums, Cattleyas, Epidendrums, Maxillarias, &c., grow in light peat earth, or what is nearly the same, rotten sphagnum, which should also be well mixed with broken crocks, or charcoal; the portion of soil elevated above the pots must be fastened together with pegs. Many sorts are found to do well on blocks, as Barkerias, Broughtonias, Phalænopsis, Lælias, Huntleyas, &c.; in this case a little sphagnum is used below and above the roots, and the whole is fixed on with zinc fastened to copper tacks driven into the blocks. The Stanhopeas, Gongoras, and all whose flower spikes are pendant and thrown out from below, are grown in baskets, and require to be suspended; they prefer a similar soil to the preceding. The whole will be found to agree generally, as regards heat and moisture, when in a growing state, but the Mexican sorts are hardier and require less warmth than the Indian species. The Cypripediums, and some others, are found to be almost hardy. In general turfy peat in small lumps is proper for these plants. This is mixed with broken pieces of crock, or of charcoal, when used. Some persons employ a mixture of turfy loam and old rotten wood; others use sphagnum moss cut rather small, and suffered to partially decay. All these mediums are suitable to the plants, and it is not material which is preferred.

Plants in Flower will be longer preserved by being kept cool, and may be sent to the drawing-room or conservatory, taking care not to expose them to draughts or currents of air. They will bear a pretty good supply of moisture when in a warm place whilst in flower, but when in a cold situation a very small quantity is required, and it must be given a little warmed. Small young plants, and such as are intended as specimens, should not be allowed to flower, but should be excited and kept shifted and growing on—the heat and the humidity being increased with the length of the days, and the strength of the natural light.

Mode of Potting, &c.—Some of this class of plants require to be grown in pots, others attached to blocks, and others planted in open baskets, &c. The mode of growth which is most suitable for the more important genera is here indicated:—In pots, not elevated:—Acanthophippium, Bletia, Calanthe, Cypripedium, Galeandra, Paxtonia, Phaius, Sobralia, Stenorrhynchus. In pots, elevated among open lumps of soil, or in open baskets:—Acineta, Aërides, Angræcum, Anguloa, Anæctochilus, Barkeria, Brasavola, Brassia, Catasetum, Cattleya, Cirrhæa, Coryanthes, Cymbidium, Cyrtochilum, Cyrtopodium, Dendrobium, Epidendrum, Eria, Houllettia, Lælia, Lycaste, Maxillaria, Miltonia, Odontoglossum, Oncidium, Paphinia, Peristeria, Promenæa, Sarcanthus, Trichopilia Warrea, Zygopetalum. In baskets:—Acropera, Aërides, Angræcum, Cycnoches, Dendrobium, Gongora, Saccolabium, Stanhopea, Vanda. Attached to blocks:—Aërides, Broughtonia, Burlingtonia, Camarotis, Cœlogyne, Comparettia, Huntleya, Lælia, Odontoglossum, Phalænopsis, Renanthera, Schomburgkia, Scuticaria, Sophronitis, Trichosma, Vanda.



CONE BEARING, OR CONIFEROUS PLANTS, AND THEIR ALLIES.

INTRODUCTORY REMARKS.

There is no section of vegetation at once so beautiful, majestic, and useful as that recognised by botanists under the title of Coniferæ. The trees of this order follow nature in all her grander appearances, girding her loftiest mountains, and filling up her unexplored and illimitable plains. Lebanon, the less famous American forests, the Himalayas, and Rocky Mountains, bear, or have borne sufficient evidence of the very striking character of those plants. Over these, and such districts, the trees in question have long cast "a weight of glory." Their height, beautiful towering or spreading shape, the freshness and perennial nature of their verdure, their bold standing in the fastnesses of rugged mountains, their arms entwined about savage rocks, and other characteristics, have long afforded imagery for the poet and naturalist. Indeed, the matter-of-fact measurement of some of the trees is so astonishing as to approach almost to the sublime. Douglas informs us that, on the north-west coast of North America, he found a tree of Lambert's pine which had been blown down by the wind, and which was certainly not the longest, to be 215 feet in length; its circumference at 3 feet from the root 57 feet and 9 inches, and at 134 feet from the root, 17 feet and 5 inches.

Perhaps the most striking references to the grandeur of the tribe of plants now under consideration, are to be found in the writings of the Hebrew poets. The cedar which clothes the magnificent ramparts of Lebanon has been always looked upon with respect and reverence. The prodigious bulk of its stem, its great roaming branches, its steadfastness amidst the fury of the tempest, its resistan to the vicissitudes of time, all appear to ha recommended it as an object calculated excite a feeling of wonder and admiratio One of the sacred writers selects it as a figu to express the majesty and powers of th Almighty:—"The voice of the Lord breake the Cedar; yea, the Lord breaketh the Cedar of Lebanon." The lofty and graceful Deoda again, we find raising the mind even of th Hindoos, for they universally regard it as th "tree of God," called by them *Devader* and specially planted, as they suppose, by h Almighty hand. But it is not at all necessar to go farther than the north of Scotland fo living illustrations of the very noble characte of the objects about to be described. Th grand old trees of the original Scotch pin growing on the heights of Bremar, Abernethy Rothiemurchy, and Duthil, with their thic and long trunks, contorted arms, and shagg spray, add an invaluable feature to the bol scenes of that part of the country. Indeed the plants ranged under this order contribut very largely to every degree of beauty an grandeur observable in the face of the earth and as the most of them are unchanging in thei verdure, they form the fittest of all accompaniments to the more enduring appearances o nature. To decorate rocks, ravines, frowning steeps, and hills, the Scotch pine is admirably adapted. For the slopes of hills and fo plains where a quieter degree of beauty prevails, the larch, spruce, and silver fir are the most appropriate. For deep woodland solemnity, no tree can compete with the cedar of Lebanon and the cedar of India, though these two are at present generally found only on gentlemen's lawns. In softened scenes, the hemlock, spruce, and red cedar may be planted with propriety; and again, in those magnificent, though at present deserted, sites by the sea-side, two individuals of the order are only waiting to be called upon to show that they are capable of resisting the usual effects of salt water. The Pinus Pinaster, and the P. Pinaster minor, or, as it is sometimes called, the P. maritima, are the two plants I refer to.

But the order under consideration supplies us not only with beautiful and grand pictures to look upon, but *the ear* is often engaged in listening to the music caused by the trees when associated together. The waving to and fro of the tops of pine woods, when the winds are high, is calculated to fill the mind with an incommunicable idea of the majesty of nature, such as is excited only by a forest, or by the sea. The shouting of the tempest whilst traversing the vast sylvan regions of America, is described to be grand in proportion to the height and bulk of the trees, and always listened to with a feeling approaching to awe. When a breeze is abroad, extensive woods and forests of the Scotch pine afford to some temperaments delightful music, such as could be listened to for hours with pleasure; to others it is melancholy beyond expression; whilst all agree that it is quite indescribable. The sound referred to is of a sweeping or hissing description, and is certainly best characterized by the Scotch word *sough*.

The uses of this order of plants are greater than that of any other; and on this account alone every particle of information relative to the propagation and growth of the different species is worthy of the closest attention. Though the oak is justly prized as contributing greatly to the strength of the wooden walls of England, yet the pine tribe has assuredly been of material service, along with the former tree, in all the purposes of naval architecture. The outworks, it is true, have been of oak, yet the no less necessary subsidiary parts have been of pine and fir. In some parts, indeed, deal timber has entirely superseded that of the oak; and the larch in particular has been found to answer extremely well for ship-building. The frigate "Athole," built in 1820, was entirely of the latter wood, and competent judges have pronounced it to be, in some respects, even superior to the oak. In domestic architecture, the trees forming the present order are universally in use, as preferable to all other ligneous products. In house-building, and in the construction of household furniture, it would be most difficult to find a substitute for the Scotch pine; and if we extend our view to all the purposes to which pine and fir trees are assigned, such as scaffolding, railing, fencing, machinery, farmers' outbuildings, and such like, it may be safely asserted that they are positively indispensable. The spread of railways has given an importance to this order of plants which hitherto was not thought of. The vast quantity of timber required for sleepers, on which the rails are laid, has operated very extensively in the northern districts of Scotland, in inducing proprietors to plant all, or, in some cases, a great proportion of their waste lands. It is not only the quantity required in the construction of a railway, but the timber, *ad infinitum*, that must be had to keep it up; the sleepers having all to be removed and fresh ones inserted every seven years. This use alone would justify a publication, at the present time, solely devoted to the best method of propagating and rearing the trees destined to occupy such an important place in helping forward the commerce of the country. Add to these uses, the products extracted from many of the trees, such as resin, turpentine, tar, and pitch. It is also to be remembered that they afford fuel to many persons living in mountainous districts, and that the roots of the Scotch pine, when split up into thin splinters, or lamina, are used by the highlanders as a substitute for candles, which emit a clear and steady light, though requiring almost constant tending. The uses of such trees, in their living state, consist in their adaptation to situations where many kinds would not grow, and in their being admirably fitted to protect others wherever exposed to the severity of the weather. Their use to man in sheltering his dwelling, is also well worthy of being noticed, for however exposed the situation may be, several of the species are ready to throw their sheltering arms around it. In truth, but for the Coniferæ, the appearance of winter throughout hilly and mountainous districts would be terrible, and, to many, insupportable.

The claims which this order has upon all those who are wishful to form arboretums, or to study certain sections of ligneous plants, will be apparent to every one. No order is more beautiful in the foliage, in the disposition of the branches, and none more lofty. It would be difficult, therefore, to estimate too highly the importance of this class of plants, whether considered as objects adorning the landscape, or as supplying one of the first materials for the use of man. As the order Taxaceæ, including the yew tree, and its allies, is so nearly allied to that of Coniferæ, it may be worth while, for the sake of completeness, to describe the few species belonging to that division, before proceeding with the Coniferæ, or true cone bearing plants.

TAXACEÆ.—The Yew Tribe.

Taxus, *Linnæus* (the Yew); from *Toxon*, a bow, an instrument of warfare used from the earliest times till about the year 1500. The English name, Yew, is from the Celtic *iw*, signifying deep green. There are two distinct species.

Taxus baccata, Linnæus (common berried Yew). This species has its leaves thickly ranged in two ranks; they are very nearly sessile, or without foot-stalks, and are about an inch in length in vigorous growing plants. The flowers come from scaly buds, are solitary, and proceed from the small angle formed by the union of the leaf and stem. In some instances the sexes are found on the same tree, but not often. The male flowers are of a lightish brown, and the female are green, surrounded with neat bracteas, or cup leaves. The fruit is a scarlet oval-shaped berry partially enclosing a nut-like kernel, open at top, and when in a ripe state, contrasted with the deep colour of the foliage of the tree, it presents a particularly handsome appearance.

The Yew is scattered over a wide geographical range, being common to Europe, Asia, and North America. In its wild state, it is found on the sunless sides and at the bottom of mountains, preferring moisture; and it delights particularly to grow in low sites in the clefts of rocks, where a rich soil has been washed from adjacent steeps and hills. It boasts of a very ancient history, having been known to all the celebrated authors of Greece and Rome. In this country, it has been from time immemorial reckoned a gloomy object, a tree of the night rather than of the day, generally found about desolate or ruined buildings, and not unfrequently indicati the lonely and peaceful churchyard. It a tree of affliction, a sorrowful object, a by the common suffrages of mankind, typ cal of wounded affection. From seeing it often in such situations, associated with t mournful silence of the grave, it is even modern times invested with a character a most sacred and inviolable. From its u changing appearance, coupled with its hard ness and longevity, it has been adopted figurative of Eternity. It lives to the age a thousand years and upwards, and in so parts of Wales it is considered to be immort for, as the inhabitants there express it, " never dies outright." Wordsworth has pr nounced it to be

> "A living thing,
> Produced too slowly ever to decay."

That it lives to the age assigned to it the can be very little doubt. Of the age of th the Yew in Fortingal churchyard, Perthshir there is no precise account; but it is believe to have been a flourishing tree at the com mencement of the Christian era, and that i may yet exist for some centuries to com The yews at Tytherly in Wiltshire, are abo 500 years old; and those at Fountains Abbey in Yorkshire, are ascertained to be of an ag upwards of 800 years.

In glancing at the history of this tree, it i curious to consider to what a variety of purposes it has been made subservient, and t what opposite ends it has frequently contributed. Looking upon it rising in dolefu silence about the graveyard, the chosen objec of that peaceful abode, and planted there as i reconcile the affections of the living, it is somewhat difficult for us to believe that it should ever have been in this country the principal weapon in the strifeful and momentous day of war, and that it is associated with some of the greatest internal commotions our country ever experienced. Turning to the remote pages of our English history, we find that from the earliest times to the date of the invention of fire-arms, and even afterwards, the yew-bow was the chief instrument in the hands of contending armies. The famous battle of Cressy was fought with yew-bows; and the victory of Poictiers was chiefly ascribed to the excellent archery of the English with these implements. The decisive triumph over the Scots in 1402 was obtained by the English bow and arrow; and the battle of Agincourt, in which Henry V. proved himself so victorious over the French, was achieved principally through the use of this weapon.

The Yew is cultivated by seeds, by cuttings, and by layering. The berries are ripe in the month of October, and it is necessary to watch them narrowly, else the birds will devour them. Thrushes and blackbirds are remarkably fond of the pulp, but the kernels they drop, and they may be always picked up in considerable quantities under adjoining trees. The most expeditious way to collect the berries is to spread a large coarse cloth under the tree, and then to shake the branches violently; but as many of them will still adhere to the branches, it is necessary to take a long stick with several stubborn twigs left upon one of the ends, and draw it sharply along the under side of the spray. This treatment will readily detach them, and, falling upon the cloth, they can of course be speedily got together. They should be immediately sown, as gathered, in a free moist soil, shaded from the south, but not under, or near to, large trees. Clayey soil, which is apt to get baked or crusted in dry weather, will not suit, for the crop depends in a great measure on the state of the soil when the seeds begin to vegetate, which will be sixteen or seventeen months after the time of sowing. If not formerly enriched, the ground should have a good coating of well-rotted manure; and if the sun should have access to the young plants, branches must be stuck in amongst them in order to shade them. Mice will attack the beds immediately after the berries are sown, and if not protected, they will totally destroy them. The setting of traps, &c., is a mere waste of time; and nothing that I know of serves so completely to deter them as a coating of fresh unmixed horse-dung, sifted with a wide sieve regularly over the beds to the depth of an inch. This coating should be pressed down evenly with the back of a spade. If, after the lapse of several months, it should so far decay as to become inefficient, it should be renewed, and finally removed with a rake when the seeds begin to grow. The plants should remain two years in the seed-bed, and then be transplanted into lines nine inches apart, the plants in the lines being placed about two inches from each other. At the end of two years more, they will require to be removed again into lines eighteen inches apart, and placed in the lines at about six to eight inches from each other. Their growth may be considerably advanced by pruning off all such side branches as interfere with the supremacy of the leader; and beyond this treatment they will require nothing more at the hands of the nurseryman.

When cuttings are to be made, shoots of nine inches in length should be selected in the month of August, taking care to cut them immediately below the previous year's growth, so that a small portion of the wood which is two years old may adhere to each. If this be attended to, they will strike root more readily. The lower leaves should be trimmed off, and the slips planted in a sheltered and shady border of light sandy soil and peat. In the course of two years they will be sufficiently rooted to be removed into lines as recommended for two years' seedlings.

Layering of this tree is a plan not often resorted to, and it requires of course a bushy, spreading stool from which the branches can be made easily to bend into the ground. All the layers require to be cut in the same way that picotees and carnations are done, that is, immediately under a joint from which the roots proceed. They require to remain two full years at the stool before they are sufficiently rooted; and care must be taken when planted in nursery lines, to prune them so as to induce the plants to furnish themselves with proper leading shoots.

On account of the slowness of its growth, and the comparative smallness of the size it attains, the Yew will never be in general use as a timber tree, though its wood has been represented as superior to a great many others for cabinet-work. In its living state it will continue to be valued for its use in hedges, in protecting tender plants, and as affording food and shelter to a portion of the winged tribes. It is one of the trees from which the nightingale delights to serenade the inhabitants of our suburban villas; and its thick shelter is particularly agreeable to thrushes, blackbirds, and singing birds in general, during the cold of winter and throughout spring, before other trees are furnished with leaves. Its great charm, however, consists in its singular adaptation to scenes of a sorrowful and hallowed description; for though many trees are now admitted into cemeteries, there is not one so constant in funeral hues, and consequently, none so appropriate when rising in that place of "deep forgetfulness," to which it has been so universally assigned. Plants, one year's seedlings, 20*s*. per thousand; two years' seedlings, 30*s*. per thousand; and three years' seedlings, 40*s*. per thousand. One year's transplanted plants, 5*s*. per hundred; two years' transplanted, 7*s*. 6*d*. per hundred.

Varieties.—*T. baccata erecta*, is a plant preserving the character of the species in its leaves, yet assuming the same erect form as the Irish Yew. Variegated specimens have been propagated, but the marking is indistinct and apt to be lost. A stunted variety of the common tree, with a procumbent or trailing habit, finds a place in Loddiges' Catalogue, under the title of *T. procumbens*. A plant with narrower and smaller leaves than those of the common, found in Maryland, bears the name, in some collections, of *T. canadensis*, but as Willdenow observes, comparing it with the common tree, "a specific difference is hard to be detected." Indeed, it would be very easy to select many varieties from a bed of seedlings; and in plantations of grown trees, scarce two plants can be found with the habit and size of leaves and fruit alike.

Taxus fastigiata, Lindley (upright, or Irish Yew.)—This very much resembles the upright cypress in the mode of its growth. The leaves of this species are not in rows, b proceed irregularly from the branches on sides: they are of a deep green colour, som what larger than those of *T. baccata;* a the plant altogether is much more ornament than the common species. No tree rises wi more grace on the well-kept lawn; it is of elegant, tapering, compact form, and is w calculated to remind one of the sweetest Itali scenes, especially if the ground-work in t neighbourhood is only in keeping with t place where it is grown. There are but ve few old specimens of this tree in Englan and hence it is deficient in association. Ireland, at Comber, in the county of Dow there is a specimen twenty-five feet in heigh but it assumes a habit by no means chara teristic of the species, its form being that an inverted cone, its head measuring sixte and a half feet in diameter. The natur habit is strictly tapering.

This species may be readily propagated b cuttings, planted under glass in Septembe in an equal mixture of peat, road-sand, other inland sand, and light loam. Th cuttings should be shaded either permanentl by a fence, or with mats fastened over the in such a way as to admit light from t north. The hand-glass or frame should n be removed except temporarily until th plants have begun to make shoots, which wi be in June and July following; and in n case are they to be exposed to the fierce midday sun until they have fully established themselves as plants fit for removal into nursery lines. The propagation of this plant will well repay all the trouble of the amateur or nurseryman, for it is one of those shrubs always in demand, and with which the market is never overstocked.

Torreya taxifolia.

TORREYA, *Arnott.*—This genus was named by Dr. Arnott, in compliment to Dr. Torrey, a clever American botanist, and one of the authors of the North American Flora.

Torreya taxifolia, Arnott (yew-leave Torreya).—This is the only species. It is a evergreen tree, with forked branches, and ha something the character and appearance of th hemlock-spruce fir. The branches are clothe with simple, linear, sharp-pointed leaves, ar ranged in two ranks, one on each side of th branches. The fruit is ovate, covered externall by a leathery integument having a small open ing at the top, and is about the size of a nutmeg It is a native of Florida, occurring on chalk hills, along the eastern bank of the river Ap pach; and was introduced to this country in 1840. No large plants of it exist in a cultivated state; and it is still rare in collections. Like other rare plants of this class, it is propagated by grafting on allied species, and in this case, the common yew tree is employed; it is also increased sparingly by cuttings; but neither of these modes are well adapted to secure permanent and handsome plants. When it is grafted, it should be placed very low on the stock, almost on the root, so that the point of union may subsequently be covered with soil; if this is the case, the scion will usually produce roots, which are of great aid to the plant, and afford some security for its permanence. *Torreya taxifolia* is identified with the *Taxus montana* of Nuttall, but not of other botanists.

In Florida it forms a tree, growing from twenty to forty feet high, and with a diameter in the trunk of eighteen inches. The wood is there employed generally for most of the purposes to which its size adapts it, and is heavy and close grained, and when mature, of a reddish colour. Like the timber of other allied plants, this is very durable, and not liable to the attacks of insects, being charged with terebinthinate matter; in fact, a pasty turpentine of a blood red colour oozes sparingly from the bark. The wood possesses a very strong and peculiar odour, especially when bruised or burned; and hence the tree bears, in Florida, the name of the Stinking Cedar.

Salisburia, *Smith;* in honour of Salisbury, a botanist. In Japan, its native country, it is called Ginkgo, a title which it retained throughout Europe till 1796, when Smith substituted its present name, on account of the other being, in his opinion, "uncouth and barbarous." There is one species only.

Salisburia adiantifolia, Smith (maiden-hair-leaved Salisburia). — A stately tree, growing around the pagodas and temples of China and Japan, and plentiful about Jeddo, Pekin, Canton, and other cities, where it rises along with the *Rhus vernicifera* (varnish-yielding Rhus). In England it assumes the habit of some of our upright-growing pear trees, with rough, grey bark, slightly furrowed when old like the common acacia. The leaves are of a pleasant green, thickened at the outsides so as to have a succulent appearance, are irregularly triangular, and bilobed, or parted at the upper end into two, and sometimes three, divisions. They resemble the leaves of some species of Adiantum whence its name of maiden-hair tree. The male flowers appear in May, on old spurs of the preceding year, without any footstalk, and are of the colour and size of the blossoms of the common berberry. The female flowers are inclosed within a calyx-like involucre or cup, something like the yew berry in its young state. The fruit is a white nut enclosed in a globular drupe. The kernel is eaten in China after being roasted, in the same way as chestnuts are done in this country.

Till lately, all the discovered trees in Britain were thought to be males, but in 1818 a female plant was reared from a cutting sent to Kew Gardens, and from that quarter a great many scions have since been distributed. As a proof of the enthusiasm and patience with which the late Mr. Loudon prosecuted the task of preparing his great work, the *Arboretum Britannicum*, it may be stated that in 1835, he and the writer of these lines were several days employed in the suburbs of London in searching for all the old Salisburias that could be heard of, in order, if possible, to discover one with female flowers. The pursuit was unsuccessful; and the only discovery made amounted to this—that the fine specimen then (and probably now), standing in the Mile-end Nursery, was a male, Mr. L. having detected flowers upon a plant in an adjoining garden, which had been raised from the old specimen in the nursery.

Male plants are very common in the London nurseries, and are sold according to size and age from 1*s.* 6*d.* to 4*s.* 6*d.* each. Those who are in possession of the male, and wish for the other, had better graft a slip of the latter on the male tree.

The sure way of propagating this plant is by layers. The stool should be planted in a loose sandy loam trenched to the depth of three feet; in this soil it will thrive better than in any other. In the immediate neighbourhood of the young shoots intended to be laid down, a quantity of sharp road-sand should be introduced, and if the twigs are carefully cut under a joint, as picotees are done, and covered with a hand-glass, they will root very speedily. I have tried them in March and in September, and find that they answer equally well at both these times. For such trees as are planted out permanently, the same sort of soil is recommended. A sheltered situation is necessary; and though little is to be expected from this plant as a timber tree in this country, it forms a most desirable object for the lawn and pleasure ground.

In one of his lectures at the Jardin des Plantes, Thouin thus relates the singular manner in which this plant found its way into France:—"In 1780, a Parisian amateur named Pétigny, made a voyage to London, in order to see the principal gardens; and among the number of those he visited was that of a commercial gardener, who possessed five young plants of *Ginkgo biloba,* which was still rare in England, and which the gardener pretended that he then alone possessed. These five plants were raised from nuts that he had received from Japan; and he set a high price on them. However, after an abundant déjeuné, and plenty of wine, he sold to M. Pétigny these young trees of Ginkgo, all growing in the same pot, for twenty-five guineas, which the Parisian amateur paid immediately, and lost no time in taking away his valuable acquisition. Next morning, the effects of the wine being dissipated, the English gardener sought out his customer, and offered him twenty-five guineas for one plant of the five he had sold the day before. This, however, was refused by M. Pétigny, who carried the plants to France, and from those five have been propagated the most of the Salisburias in that country."

It is somewhat singular that notwithstanding its striking appearance, its unique leaves, and handsome habit, the Salisburia is very seldom seen throughout England.

A plant of it grew against the stove in the grounds belonging to the late Mr. William Malcolm of Kensington, but in all probability it has been removed to make way for the improvements effected there by his successor, Mr. Forrest. In the country it is still more rare; and though introduced so long ago as 1754, passes currently as a novelty.

There are several *half-hardy* trees belonging to the order Taxaceæ, which warrant their being enumerated here, more especially as it is expected that some of them may yet become valuable both as timber and ornamental trees in the climate of Britain. Such as have been known to give such promise by standing in the open air in this country with a slight protection only, are here detailed.

PODOCARPUS, *L'Heritier.*—A genus very closely allied to Taxus and not long detached from it, comprising lofty trees, natives of China, Japan, South America, New Holland, the Cape of Good Hope, and the East Indies.

P. macrophyllus, Sweet (broad-leaved Japan Yew). Introduced into the Kew Gardens in 1804. Leaves scattered over the branches, not comb-like as in the common Yew, and pointless. A lofty and at the same time a spreading tree, growing in Japan, producing wood which resists the attacks of the worm, and is consequently prized for cabinet-work. A plant against a wall in the garden of the Horticultural Society, Chiswick, is from five feet to six feet high.

P. spinulosus, Sprengel (spinous-pointed Yew).—Leaves opposite, whorled, and lanceolate. A native of Port Jackson and adjoining districts, growing in England against a wall, at the rate of three inches in a season.

P. nucifer, Persoon (nut-bearing Japan Yew).—A species bearing a striking resemblance to the deciduous cypress, having the leaves in two ranks, pointed and lanceolate. A lofty tree, growing in the northern provinces of Japan, Nepal, and Kamaon; but not yet rising freely in Britain. There are specimens at the Hackney nursery, Goldsworth, and White Knights, growing at the rate of four feet in six years. The wood is not equal to that of *P. macrophyllus*, but the plant itself is reckoned hardier.

DACRYDIUM, *Solander.*—The sexes of this are diœcious, so called when they grow apart on different trees. The male solitary, oblong, and the female solitary, borne on the tip of a shoot so as to terminate it. Fruit egg-shaped.

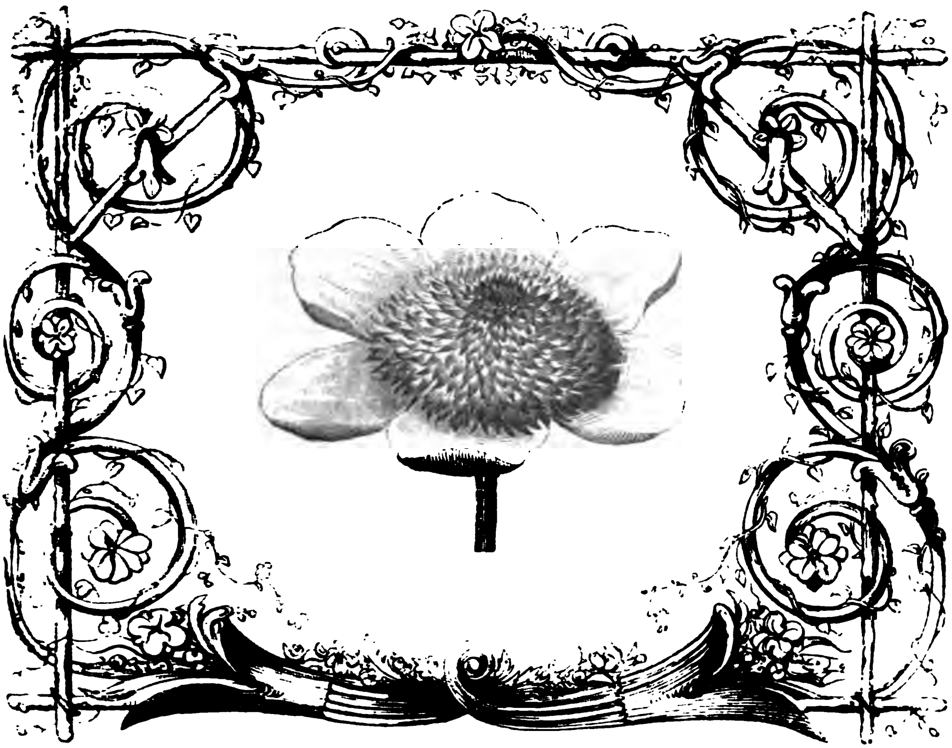
D. cupressinum, Solander (Dimon Pine). —An evergreen graceful tree, with drooping branches, covered with fine spray and leaves, like an arborvitæ, or some varieties of the club moss. Discovered by Dr. Solander, in New Zealand, during Captain Cook's first voyage, and introduced into England in 1825. Captain Cook described it, under the name of the spruce tree, as measuring at the base from six feet to ten feet in girth, and from eighty feet to one hundred feet in height, quite large enough to make a main-mast for a fifty-four gun ship. Bennett adds that "the timber is considered harder than that of any of the New Zealand coniferæ, and is much valued either for planks or spars." There are plants of it in Knight's Exotic Nursery, and at Messrs. Loddiges', where it is propagated along with heaths by cuttings.

D. excelsum, Don (tall Dacrydium).—The loftiest timber tree of New Zealand, attaining a height of from 120 feet to 130 feet, with a trunk of about fifteen feet in diameter. The wood, which is soft, is used by the natives in the construction of canoes.

D. elatum, Wallich (lofty Dacrydium). —Introduced in 1830. Represented to be a lofty evergreen tree, a native of Pulo-Penang. The finest specimen in England is in Knight's Exotic Nursery, Chelsea.

PHYLLOCLADUS, *Richard.*—A genus called monœcious, having the one sex in one flower, and the other sex in a different flower. The fruit bears a close resemblance to those of Taxus, and the leaves have an obvious alliance to those of the Salisburia.

P. trichomanoides, Don (Trichomanes-like Phyllocladus).—Represented to be a large tree of graceful regular growth, like a silver fir, seventy feet high and fifteen feet in circumference, furnishing very valuable timber for ship-building, but rather too hard to be generally applied in house carpentry. This plant is at present exceedingly rare in England. Its leaves are of an irregular wedge-shaped figure.



GLENNY ON THE ANEMONE,

ITS CULTURE AND MANAGEMENT.

There are very few subjects treated worse than the Anemone in this country. It is perished in the tuber or dry root, planted at a given time, bloomed, if it presumes to bloom, and taken up again to dry; and after being stored a given time, again planted, to undergo the same routine over and over again. And people wonder that they cannot make sure of a good bloom year after year, as if the plant had a fair chance. The Anemone has been known, at any rate in our practice, to continue green the year round; and they ought not, under any circumstances, to be taken up while the foliage is green, for they will frequently maintain their bloom nearly all the winter through, and exhibit something like a constant growth and constant flowering for years. A bed of Anemones planted in October will be up the same autumn if it be mild, and with light litter to protect them through the hardest frost, will bloom early in the spring, and continue flowering for a long period, at least partially; and unless the leaves turn brown and decay, we should certainly not disturb them. There are single and semi-double of the florist's Anemone as well as double ones, and the most strange thing is, that the double one has nothing in common with the single and semi-double kinds. The single varieties are cupped like a tulip, but the seed vessel is large and black; when these have two or three rows of petals one within the other, they are called semi-double; but the double ones are like a flat dish formed with the petals, and the centre is filled with a cone of florets totally unlike the petals, and forming a mass of a different colour. We should like to see the florist labouring hard to procure a double one from the semi-double kinds, that is to say, by multiplying the rows of petals until they fill up the flower like a ranunculus, and cover the seed-vessel altogether. The propagation of the Anemone from seed gives us the advantage of new varieties, but they rapidly increase by the root alone, and thus perpetuate those varieties already raised, and worth it. We must treat of these methods separately; and first, we will speak of raising from seed. The best way to commence this is to pick out from some nursery collection some of the brightest and best flowers, that is to say, varieties with thick broad petals, forming a cup like a tulip, of half a hollow ball, with as many rows of petals as you can find; but if there be any very brilliant and striking colour, it must not be lost sight of because it is quite single, because it will help to diversify the seedlings to be raised from the selection, therefore any flower that is very bright and moderately formed, any that is very large, very thick petalled, or with more than one row of them, may be marked as desirable, taken up with a good ball of earth, and carefully removed to the place you mean to grow them in. They should be replanted in rich soil without disturbing the roots. If this be done well, and each plant be covered with a large flower-pot, with the hole stopped up, to keep off the sun and wind the first day or two, the chance will be in favour of your saving seed the first season; we ought, however, to begin watching the beds from which we make the selection, from the time the first flowers open, and to remove those we desire to possess as soon as we can discover them, before any of their flowers are wasted. The seed is woolly and attached but slightly, so that the plants want constant watching, or the wind would blow it away altogether, like the seed of a thistle. The bed therefore should be picked over daily when the seed begins to ripen, and in very dry hot weather, twice a day, for it is not well to pick off the heads of seed before they begin to loosen. The seed as picked off should be put into a box rather deep, to prevent it blowing out again, for the seed will all disengage itself after gathering, the same as it would on the plant, and the box then secures it; some put it in bags, but this should not be, till it is thoroughly dried. The seed thus saved from good picked flowers will at least afford a chance of better another year; and the plan, which is not a bad one, of sowing seed directly it is gathered, answers pretty well, except in very severe winters; but there is danger of losing the plants while they are so small, as they must of necessity be when only sown two or three months before a winter usually commences. When common Anemones are raised for mixtures, the roots of which are to be sold by weight for common border flowers, little else is done than to rake a border or bed even, rub the seed out in earth or sand, sow it as evenly as possible all over, and rake it in as you would onion or turnip seed. Here it remains with occasional watering, and the bed kept clear from weeds (which spring up sooner and stronger than the Anemones), until they flower, simply covering them with open litter, such as peas-haulm, long broken straw, or other lightly lying stuff, that will keep off wind and frost whenever either prevails. But with choice seed, to which we look for something valuable, and of which we can hardly afford to lose a grain, lest it should be the best, we prefer sowing in spring, according to the following plan. The seed of the Anemone is attached to a woolly substance that renders it difficult to separate, unless it be rubbed in dry sa or earth, but when mixed with this it sep rates easily, and is ready for sowing. The are those who sow in boxes, but as the pla is hardy, all that is necessary is to provide good rich loamy bed, not too strong, ra it very level, and sow the seeds very thin all over it, then sift some mould finely ov it, to cover every seed, but not too muc Here they may take their chance with all tl weather, until they come up, when they mu be occasionally watered and weeded, for allow weeds to grow up among them wou be to retard their growth, and in all prob bility kill any that were weakly, and the are mostly the best. The importance, ther fore, of removing the weeds must be obviou If the seed has been sown pretty well, and evenly distributed over the bed, the onl thing required is this continual watching an destroying the weeds. We have more tha once raised the seedlings, and never remove them till they bloomed, but every plant wa about two inches from any other, and a larg breadth was sown too. It was by well mixin the seed with three times its bulk of silve sand, and then carefully spreading it well, tha we got it thin and sufficiently distant. On bed continued partially blooming from th autumn through a mild winter, and in sprin we removed the best with a trowel, after wel watering them, and planted them withou disturbing the roots, in a bed six inches apar every way, and here they remained two whol seasons before the foliage decayed. We continued removing the best from the seed bed from time to time, so long as there were any worth removing. During all this time the weeds were pulled up as fast as they appeared and got large enough to be taken hold of, and some of the weakest and smallest in the first instance proved the best when they became matured. By mixing the seed with silver sand and rubbing it well to separate it among the sand, the whiteness of the sand shows where the seed lies, and enables us to scatter it evenly, which is not the case where it is separated in mould, as it all appears of a colour with the bed we are sowing it upon, and we cannot see where it lies. Of course we advocate the practice we found so successful. When the foliage turns yellow or brown and decays, the roots may be safely lifted and dried in the shade, but as they are all supposed to be different varieties, that is, have been selected for something good in quality, and seedlings are, when good and distinct, worth naming, every root, or rather, patch of roots, for in a summer or two they become so, must be kept in a bag by itself, with its number or name; but if the intention is to keep them as mixtures, this trouble is unnecessary, they may be all thrown together at once. It should, however, be recollected that the value of a florist's flower is greatly deteriorated by mixing, and that in selecting seedlings, we should be guided by those properties which enhance the beauty of a variety, and thus improve on what we have; but the Anemone, single and semi-double, may be worth saving, though not worth naming and keeping separate; therefore, while in flower, this distinction should be made, and in taking up, those to be kept separate must be bagged, while the others may be thrown together. While these are out of the ground they must be preserved from damp, which very soon destroys them, and from heat, which would shrivel, and if kept up too long, weaken or kill them outright; they require as much care as soft bulbs in this respect, and if you have proper drawers for them, they would be better loose in their several partitions than in bags. While any sort of bulb or tuber, or corm or other root, usually taken up are in store for the winter, they require frequent looking to; and if any damp be perceptible they must be spread and dried, and the bags also dried; and this will suggest also that a place naturally more dry should be selected for them. If, as it will sometimes happen, the foliage should die down or decay the first season, the roots may be taken up, and great care must be taken that they are all obtained, for they may not be very large; and the only way to depend on getting them is to sift the top three inches of mould after you have taken out all you can. In this case they should be planted again in October, because they are not the first year large enough to bear storing so long as when there is more substance. Indeed, even in case of the foliage dying down we should not remove them, unless the ground were very foul, or the space wanted for something else, or it were desirable to change the place in which they are to grow; we should prefer their remaining altogether, the second, if not the third year, merely removing as they come into flower all we intend to retain for their good qualities or remarkable colour, always excepting that we would not even let colour induce us to retain any star-like varieties, for narrow and pointed petals are the bane of floriculture, be they in whatever flower they may.

The roots of the Anemone increase rapidly when in ground that suits them. They are for the most part shapeless brown tubers, the eyes in which are discernible and that is all, and of course, if broken into as many pieces as there are eyes, will make so many plants. It is, however, usual to break them into pieces with one strong and several weaker eyes, to ensure strong bloom to every piece of tuber. These are in general sold by weight in Holland, and although collections are now put up at London seed shops with a root of each of the several varieties, and the sale by weight almost confined to mixtures, the tubers run so uneven in point of size, that unless they are seen, or warranted to be strong enough to bloom, the weight seems to be the more satisfactory mode of disposing of them. The seedling tubers of such as are to be named and propagated should, for the sake of rapid increase, be broken into as many pieces as there are good eyes, so that the pieces are not too small, so as to risk their loss altogether, and they must be planted in a part of the garden where no Anemones have been before, and if possible in fresh loamy compost placed new for the occasion. It is all but impossible to clear the ground of tubers so fragile, and as a very small piece will grow, it would cause other sorts to be mixed with the new ones, which should be kept as distinct as possible. These distinct sorts should be planted in drills, and a label to each sort. Six inches apart is the proper distance for strong roots, but when you come to the smaller ones of each sort they may be three inches only. There should however be a very decided vacancy of six or eight inches between the last of one sort and the first of the next sort, to secure them from being mixed in the taking up. In this bed they may be placed in October, and they need not be taken up until the foliage turns yellow. They will bloom—such of them as are strong enough—by the early spring, and if there be a warm summer the foliage will turn yellow soon after the seed ripens; but if it do not turn yellow, but on the contrary continues growing, on no account disturb them. They will be all the better for remaining two seasons on the same spot, for unless the plant absolutely rests, which is indicated by the decaying leaves, it weakens the tuber to take it up. When they are taken up they require to be sorted and arranged into blooming roots and unblooming roots (for we treat the words tuber and root as the same thing though botanically it may be incorrect). Some of the largest may break into two or three blooming pieces, and several bits for planting, while many of the small bits of the previous year will have become large enough to flower well. In planting them again in the month of October the same care must be taken to keep them separate, to keep the blooming ones six inches apart, and those that are too small to flower three inches apart. You will shortly find you have a good stock of the varieties you have selected for naming and propagating, and you can let them out among other growers or not as you please. But in the mean time you must have been saving seed even of your selected seedlings, and sowed it and treated it all through in the same way you treated the first. Every year's seedlings ought to improve your stock by the addition of some novelty, and especially value those which become more double by the multiplying of the rows of petals, for we should like to see an entirely new class of double flowers created as it were by increasing the petals, instead of the mass of florets which distinguish those at present called double flowers. As you procure advances towards this desideratum, those which they beat should be thrown out of collection, for the presence of worse flowers throws back the produce even of a fine one very much. So that in saving seed the best varieties should be chosen, and none that are inferior should be even near them. By year after year saving the seed from the most desirable only, by treating this seed carefully as directed, by selecting each year such alone as beat those you already possess, and carefully seeding from them again, a few years will reward you with a new race of much improved rarities, and perhaps with a distinct new class of double flowers. The general culture of the Anemone for the twelve months round may be thus laid down.

January.—The plants will, if the winter has been mild, be very strong and growing, easily checked by the frost, and some of the more tender ones especially so. They must be covered in the evening with hoops and mats, or cloths of some kind, or litter to prevent frost and wind from injuring them. It is not too late to put in the ground any tubers that may have been left out, or that you may have procured since planting time, though they will not grow so much in a season as the autumn planted. Seedlings must be weeded carefully if they are up, and if not up, the bed must be kept clear of any rank growing weeds, because they would overrun and destroy the plants as soon as they germinated; and, as we recommend spring sowing for the choice varieties, there should not be any seedlings very young. But all beds must be kept clear of weeds. The earth may be stirred between the rows, and the soil pressed close to the tubers, for the growth of the plants will crack it and prevent its sitting close until it is crumbled and gently pressed. The covering from frost, which should not be put on until the last thing at night in mild weather, should be taken off at sunrise if there be no frost, but if there be, it must remain on altogether until the frost has departed.

February.—Plant the collection for June showing. It is the proper month for the spring planting. The plants still growing fast if the weather be mild, require much the same attention as last month, and if there have been much wet to close the pores of the surface, the ground may be loosened again and some of the earth drawn close to the plants, in a slight degree earthing them up. Cover from frost still more carefully if possible, as the forwarder the plant, the more danger of a check. Although they are too hardy to be killed they are easily spoiled for the bloom, and the manner in which the flower of double varieties is affected is a kind of blight to the centre, by which the mass of florets is *destroyed*, and the outer petals alone appear, half their usual size and in bad colour. Keep clear of weeds in all cases, and prepare beds for sowing seeds towards the end of the month, that is presuming it is not frosty nor too wet, for the next month will do if the ground be not in order this. The manner of sowing the seed has been mentioned, and it matters little whether in this month, next, or the month after, always excepting that the earlier it is sown the stronger it becomes to stand the winter, and if the weather be favourable there is hardly any interruption to the growth through the winter months; but if they are too small when the frost sets in, some are sure to perish, and these are generally the most valuable, because the further a plant is removed from its natural character, the tenderer it in general becomes, although it may be what is called hardy. It is the young shoots of trees that always suffer in frost and cold drying winds, because they are full of sap, and the juices evaporate when they can least afford to lose them.

March.—If the weather be mild now the blossoms of the Anemone rise pretty rapidly, and many will be in flower before the month is out. The frost and cold winds destroy the texture of the petals and take out the colour; in fact, when thawed again they are spoiled. Those therefore who are at all anxious to preserve the beauty of them should cover them as carefully as they do tulips. In large beds and masses of common sorts few take the trouble, because if one set of blooms perish there are so many ready to succeed them that a day or two of mild weather restores the beauty of the beds, although the first may be entirely swept off. Besides, where they are used with the various early bulbs to make up early bloom for geometrical flower gardens or clumps on a lawn, any preparation for covering would be out of the question, as it would constantly disfigure the place and render it always unsightly, but in nursery beds not connected with the plan of the flower garden and dressed ground, pease-haulm may be kept handy and be placed over them of a night and continued on them while there is any frost. This especially applies to seedlings, every flower of which we are anxious to preserve as long as we can. Seed ought to be sown this month as before directed, if it be not already sown, and if there be drying winds or frosty weather, mats may be covered over the bed, but, with a few pegs to keep them down; it keeps the bed moist in dry weather, prevents a scorching sun from drying up the seed as it swells, and hastens the germination. Whatever roots are out of the ground ought to be planted this month at the latest, and they should be planted in drills six inches apart for blooming, and the small ones that will not bloom, three inches. The drills also ought to be six inches from each other, and the tubers should be covered two inches.

April.—This month may be considered the height of the bloom in ordinary seasons, for all the autumn planted; and those planted last month will be growing fast. Many make a practice of planting choice varieties for showing in the spring instead of the autumn, because they should be out of the way of frosts, which it is considered, though erroneously, destroys many of the tubers. This, however, can only happen in very severe winters, and very careless mismanagement. They are as hardy as tulips, and if in well-drained ground, and moderately good soil, are quite as certain in their growth and flower. An ordinary frost will not hurt a bloom before it is opening, and though it may check the growth, and prevent the full development of the usual size, it is as easily counteracted by covering as injury to the tulip. Seedlings require a continuance of former treatment; those which have been covered after sowing, and in coming up, should have all the air that can be given on mild days; and if the season be dry, they should be refreshed with occasional waterings. Seed may still be sown, if it have not all been sown already; it may make sufficient growth to go over the winter, though last month's sowing will be better and stronger, particularly if the season be at all unfavourable. Weeds, and especially if the ground be foul, will now grow fast, and must on no account be allowed to get a-head, not only because they rob the plant of the nutriment it requires, but that their roots also get so entangled with the tubers, as to prevent their being drawn out without disturbing the plants, and among seedlings the plants will actually be drawn out of the ground. The spring planted tubers, the plants of which are now above the ground, require the earth to be stirred on the surface, and crumbled small close to the plants, which, having broken the soil and laid it hollow, would be otherwise greatly exposed to the weather.

May.—The spring planted beds will require great attention as to the watering and weeding; and towards the end of the month may be throwing up their blooming stems. Seedlings and small plants must be constantly weeded, for the reasons given before; they are more likely to be injured than the more established plants. The bloom of the autumn planted will begin to decline fast, and if the weather be fine, warm, and open, will begin to perfect their seed pods. It would be well to cut off all the pods of the smaller and later flowers, and reserve the finer ones only, as the general quality of the seed will be better for being divested of the remainder. The entire collection may now take their chance as to frosts, but if you have a desire to preserve the bloom of the spring planted ones, and your best collection is hooped, so that mats can be easily thrown over, they may be covered the same as tulips are from the heat of the sun, as it very much shortens the season of flowering to let them have it always. Unless, however, the season has been very favourable, they will hardly be forward enough to hurt by sunshine till next month. Weeds, the greatest of all enemies to all subjects that are planted shallow, must be jealously watched, for the reasons we have given before. Watering also must be attended to, and this should be done before or after the sun attains any power. It has been said by many, and acted upon by more, that it matters not whether the sun is out or not, because all the flowers and plants in a garden seem refreshed by a shower, even if the sun comes out as hot as it ever does after it; but the argument is bad, because when there is a shower the whole earth is wetted; and that is not all—the whole atmosphere itself is humid, so that independently of the rain, the air being already saturated with wet, there is much less evaporation from the plants; but next in benefit to a shower of rain is a thorough good soaking with water, not on the plants merely, but all over the garden, and the only way to do this effectually is by means of a garden engine, or syringe, playing all over it.

June.—The strong plants put in the ground in February will now be in full bloom, and watering, which they will require in hot weather, must be done between the rows, and in great plenty; the bed should be regularly and completely soaked, and the best way to do this, is to use the pot without the rose on it. When a bed is thoroughly soaked, the damp arising from it does the foliage more good than wetting it on the surface; but, in this case, we have to avoid wetting the flowers, which are really damaged by it, not that they are much hurt by a shower of rain, for the flowers close in general before rain. If you are blooming for show cut off the small side buds that are rising, and only retain two of the principal flower stems: this will not only strengthen the bloom of the principal stems, but it will also assist the roots or tubers in their growth ; for although the growth of foliage is necessary to the increase of a root, the flowering, and fruiting, or seeding of anything is the reverse. On this account it is usual, in growing the off-sets of bulbs, such as hyacinths, to pick off all the pips of the spike of bloom but the top one, which is considered enough to form a kind of leader for the sap of the stem, which, if picked off or broken, might bleed and rot the heart. The flowers of the Anemone should be shaded, the same as those of tulips, all the heat of the day, but it is generally done by hoops and cloths, instead of a stage like the tulip bed. Pay constant attention to weeding, for the neglect of this for a few days would almost overrun them in growing weather. Examine the seed pods of the early blossomed ones, and pick them daily if necessary ; they should be picked the instant they begin to loosen, which is easily seen, and if not taken in time, would blow all away in a few minutes ; directly therefore they begin to fall, loosen, or appear disturbed, they ought to be picked off, and in hot weather they must be examined two or three times a day.

July.—Towards the end of the month the foliage of the earliest may begin to turn yellow and decay ; and, if so, they must be taken up directly, because the roots would be found in good order, and if left in the ground a few days, a shower or two of rain would start them into fresh growth, and then they must of necessity be left to go on again another season. The later blooming ones will have gone off and begun to swell the seeds ; or it may be, if hot weather, they have actually begun to ripen : the treatment must be the same as has been already recommended for the earlier ones. Seedlings must be weeded still, and if they are too thick in the seed bed, they must be thinned ; the easiest way to do this is to water the bed till it is as soft as mud, they may then be pulled or lifted out with a piece of stick, and planted three inches apart in a new bed, and enough should be removed to leave them on the seed bed not more than two inches apart ; but if the sowing has been moderately thin, the bed should not be disturbed much ; it is only when there are little thick patches about that the places where they are too thick should be thinned. This applies to the beds that were sown in the spring, and in which the plants are now large enough to handle well. If these seedlings begin turning yellow, take them all up and replant them soon afterwards, as the smallness of the tubers makes them liable to dry up and lose their vegetating power. They should be dried in the shade to get rid of the extreme moistur which, in store, would subject them to mildew and then be laid by in boxes for a month o two at the most; but it is to be understood tha if they were removed from one bed and immediately planted in another, no harm woul come of it ; on the contrary, they would soon vegetate again, and be progressing toward maturity.

August.—All whose leaves have turne yellow should be taken up, and the larger ones dried and laid by ; the small bits may be planted again directly in fresh beds, and at the proper distances according to their size ; three inches is enough distance in the row, and the rows six inches apart. Those that continue growing must not be disturbed, but they must be weeded regularly, and also watered when they require it, for it would injure them greatly, when once they had started their fresh growth, to let them suffer for want of nourishment. In digging up Anemones there ought to be the greatest pains taken to get out every small bit of tuber, and after all has been done that could be done by hand, the earth, within two or three inches of the surface, ought to be sifted and picked, and the bits found thrown among the mixtures. The beds intended for October planting should be dug, and the earth thrown out on each side to sweeten ; it should also be turned over two or three times, and picked clear of wire worm, grub, or other enemy. As the flowers go off of the best beds, and the foliage indicates drying, the rain should be kept off to prevent the fresh growth of the tubers commencing before the other was done.

September.—There is no treatment required this month at all different to that previously mentioned, if there be any plants now growing ; and as for the most part they will be in store, they should be occasionally examined to see that no mouldiness appear ; if there be, they should be brushed dry and laid in the dry a while before they are returned to their boxes or bags, for the mouldiness would soon destroy them if neglected.

October.—This month, the quantity intended to bloom early should be planted. At the commencement the soil should be turned over for the last time, and mixed with as much cow dung properly rotted as would have laid three inches thick over the whole bed, and be well incorporated with the ordinary soil. We are presuming that the ground all over the garden is properly drained, and if not, it should be done, for it is morally impossible to grow these plants well in a soil in which the water lies, and although it is not always so considered, and many plants and flowers grow in spite of ill usage, all things would progress better for draining the soil. The beds should be at least eighteen inches deep; and many put two or three inches of rotten dung at the bottom. The soil being well mixed and returned to the beds, should be allowed to settle down a little, for it will stand a good deal higher than it ought, at first. In a fortnight or so it will have so far settled down as to be in no farther danger of sinking. The surface may now be levelled, and lines drawn along the bed from end to end, and quite tight; drills should be drawn three inches deep, and the tubers placed six inches apart in the bottom; the earth should be drawn upon them and gently pressed, so that they be covered a good two inches, or at first a trifle more, say three inches, because the rains which fall and wash the surface will lessen its depth. Here they may remain without any farther attention except the removal of weeds, if any come up. We have invariably had the beds four feet wide, and containing seven drills, with alleys two feet wide between. They are convenient, because we can reach to the middle row from either alley, and for appearance they can hardly be improved, besides which, they are as wide as can be conveniently covered. If there be any whose foliage has decayed, and their tubers are not yet taken up, no time should be lost in doing it, and those so delayed will make the best bloomers for the spring planting.

NOVEMBER.—The directions for this month would be the same as last in every respect, so far as they would apply; for instance, tubers that should have been planted last month would require to be planted this, and the same directions would be applicable. Any that ought to have been taken up and were neglected, would want to be taken up now and carefully dried for storing within boxes and bags. The necessity for weeding where weeds were troublesome, and of watering if the month were hot and the winds parching, will be obvious; and if there be any small tubers among those intended for spring planting, the small ones ought to be parted now, as they are better in than out of the ground. Examining the tubers for spring planting, and attending to mildew and damp, and their removal, is a subject of importance, and ought never to be omitted while you have tubers in stock.

DECEMBER.—As the planted tubers will, if the weather has been mild, be now through the ground, you must provide some covering, either loose litter of some kind, or hoops to enable you to throw mats or cloths over, so that the sudden frost may not injure them. This covering may be put on at night, and if it be frosty remain on during the day; the cloth should be transparent, for the obscurance of light is always more or less injurious to growing plants. The covering, therefore, should admit the light, though not the air, if it be over hoops; but litter like peas-haulm, which touches the earth itself, and surrounds the plants, protects them against wind, and keeps the natural warmth of the ground from going off; nor does it exclude the light altogether, and even in a long frost it so tempers the weather, or the effects of it, as to render the plants essential service. When covered with cloth over hoops, the cloth should be pegged down to the ground, and the hoops should be very shallow, because the less room there is between the ground and the top, the better for the subjects under it. The ground should be turned out of the beds for spring planting, eighteen inches deep, and the soil laid on two ridges, one on each side the bed; here they should, during this month, be turned several times, and before sowing, it should be dressed or mixed with cow dung as directed for spring planting, so also should the bottom of the bed be dunged as before mentioned. If there be frosts, and the soil gets occasionally frozen, so much the better, for frost always opens the ground and ameliorates the soil. As soon as a thaw takes place the soil should be turned over again, that another surface may be exposed to the weather.

As general instructions, the winter months should be taken advantage of for the collection of composts, and turves to be rotted into compost, and leaves to rot into vegetable mould, which, if the loam were taken from below the turves instead of being rotted turves themselves, would require leaf mould to compensate for the absence of the large proportion of vegetable mould that forms out of the turves and the roots when rotted; the making of tallies or labels to mark the various kinds, and otherwise preparing for the more active summer duties.

With regard to the properties of the Anemone there is no more known than there was a few years ago known about other florists' flowers. It is true there had been something published, something professing to be the criterion of a good flower of the sort treated of, but it was as indefinite and ridiculous as could well be imagined. We have the same thing published of the Anemone, the same indefinite, groundless, and useless conditions, adopted without a principle to build them on, and put forward without any regard to whether it could make a flower better or worse: for instance, take Mr. Loudon as the authority, because his is the best, and we have the following criterion of a fine double Anemone:—"The stem should be strong, elastic, and erect, not less than nine inches high. The bloom or corolla should be at least two inches and a half in diameter, consisting of an exterior row of large substantial well-rounded petals or guard leaves, at first horizontally extended, and then turning a little upwards, so as to form a broad shallow cup, the interior part of which should contain a great number of long small petals imbricating each other, and rather reverting from the centre of the blossom. There are a great number of small slender stamens intermixed with these petals, but they are short and not easily discernible. The colour should be clear and distinct, when diversified in the same flower, or brilliant and striking if it consists of only one colour, as blue, crimson, or scarlet, &c., in which case the bottom of the broad exterior petals is generally white ; but the beauty and contrast is considerably increased when both the exterior and interior petals are regularly marked with alternate blue and white, &c., or stripes, which in the broad petals should not extend quite to the margin." Such are the properties of the Anemone laid down by our predecessors, and accompanied with an illustrated wood-cut, in which the outer "well rounded petals" are drawn almost round, and forming much such a shaped flower as if six shillings were placed round half-a-crown. We may be told some day, as Mr. Wood has told the public with regard to carnations, that the properties (of the Anemone) have been published years before we wrote ; and so they have been, but we hesitate not to say that the properties as laid down above have been the cause of the flower not having made one step in advance. The "well rounded petals" as they are called, are the worst that could be imagined as to the appearance of the flower, and unless the properties laid down are such as would enhance the beauty, they had better been left alone. Now there can be no good reason for the stem being nine inches long, unless it were for the convenience of large nosegay makers, in which case the Anemone must be set down as a flower very fit for bunching, and of no sort of importance as a florist's flower. Now it does so happen, that the more dwarf an Anemone is the better it is in appearance ; six inches for a flower stem would look infinitely better than nine, but for real beauty the more nearly the flower is down upon the foliage, the better the bed must look, and the richer the contrast. Then, so far from their being well rounded petals, there could not be a worse fault. The flower itself should be circular, and not even show any indentation where they lap over each other, whereas your well rounded petals would show the division half way into the centre, and there is no getting out of this, because there is the specimen of the perfection before us with the actual division between the petals indented more than half ; otherwise it might have been said, and would have been said, that well rounded petals meant that the flower was to be well rounded. And this point, the ou line of a flower, is by far the most importan Then, all the other essential points are lost sig of so completely that it would be quite po sible for a flower to be in every respect up t the silly standard laid down here, and yet n be worth growing at all. Now the peta ought to be thick and lie flat, the colou ought to be dense without regard to bright ness, for colour is a matter of taste alone, an a Waterloo blue would be as valuable as bright one, a sky-blue as much so as eithe Then with regard to the florets that compos the centre or cone of which the double only ar possessed, they should be as large as possible the larger the better, and they should form half ball, laid on a flat round disk. If w descend to colour at all, it would be desirable t have the centre a totally different colour t the broad petals, and thus present a contrast then again, if there be stripes, or blotches, o marks, they should be well defined, but it will strike any one upon reflection, that a flower might be right up to the criterion of a good double Anemone, and yet show the six deep divisions of the petals, which alone render it worthless, and have thin flimsy petals which form another fatal blemish ; it may have a flat poor centre, which is a third fault. Now any one of these three faults would make a flower good for nothing, and yet might be prevailing to any extent in a specimen in every way answering the description laid down as the criterion of a fine double Anemone. We presume, that as we lay down very distinctly the properties required for a perfect anemone, and do not anticipate any speedy approach to it; those who are so fond of pretending that every thing was known beforehand, will carefully peruse Mr. Loudon's criterion, and then tell us how much it contains that they find in the properties of flowers as laid down by us. The truth is, that not one flower was properly defined; not a solitary instance of a criterion founded upon a sound principle can be urged with regard to florists' flowers and plants, and on this occasion we have produced the best criterion there was to show how utterly useless and worthless it was. People may talk as they like about what cannot be reached, but we have reversed the order of things, and purposely set up a test which is unapproachable, and had in view only what would make things perfect.

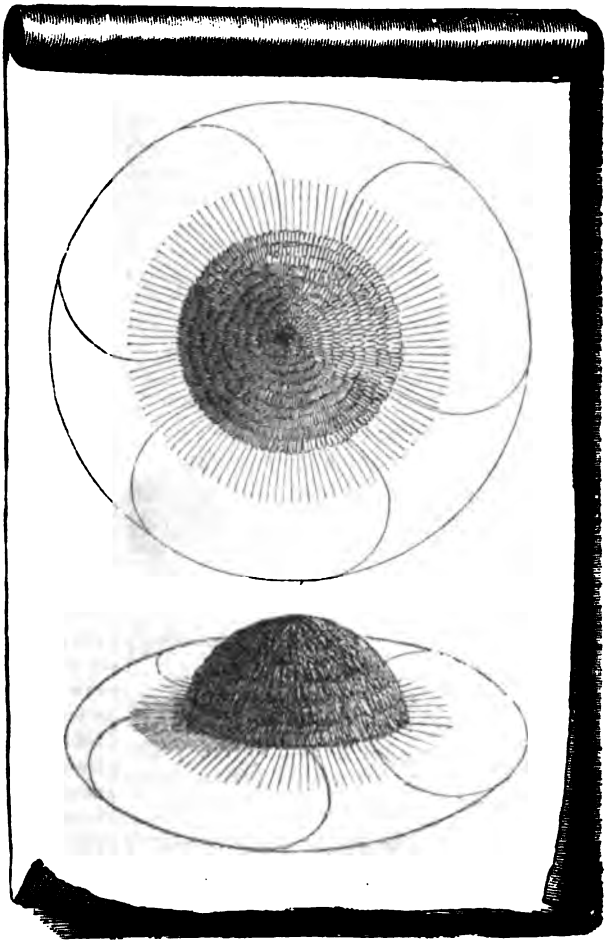
In choosing Anemones new for a collection we have already recommended the course to pursue with regard to the single and some double varieties, but with regard to what are called double, which we nevertheless think an improper name, there are some favourites which may be commenced with, but they are so far behind what they should be, and so equal, that after taking a dozen each of the following, one each may be taken of any of the Dutch kinds, for at present they excel us in the culture of the (so called) double anemone. Those we should choose would be

Josephine, bright scarlet and fine centre.
Cramoise Royal, fine red ditto.
Rose surpassante, fine rose ditto.
Couleur de sang, fine crimson ditto.
Azure incomparable, fine blue ditto.
Celestina, dark blue or purple ditto.
High Admiral, scarlet ditto.
Scarlet superbe, splendid scarlet ditto.

Beyond these we should only have one each of as many varieties as were described double: some will be found worth propagating separately, but the majority may be thrown into mixtures. Still the flower has been comparatively but little cultivated as a florist's flower, so that the distinct varieties have not been paid much attention to. On this account, therefore, and taking into consideration the cheapness of the flower as imported in collections, it would be unwise to omit any with a moderately good character, though it would be quite as unwise to buy more than one of a sort until they were tried. Many will be found to vary so little as not to be worth keeping; in this case the best of a particular colour or shade ought to be kept, and all others that are too near it should be thrown out as border flowers, or mixtures. There may be found among a collection some even better than those we have mentioned, but not even known in this country.

THE PROPERTIES OF THE ANEMONE.

We shall, notwithstanding all the gaudy varieties which are cultivated in our gardens, treat the Anemone as one quite worthy of being elevated to the distinction of a florist's flower. The single ones are beautiful in a border or a clump; they bloom early in the spring, late in the summer, and even all through a moderate winter, if they are managed well for succession. The flowers are bright and abundant, and nothing can well beat them in appearance during the untoward season in which they bloom. The single ones have, for the most part, the finest made petals, and we have seen the flower cupped like a tulip, and even as large as some tulips. The so-called double varieties are not properly so called, because they have but a single row of petals, and a crowded hairy centre of small florets. These also are pretty border flowers, but they are not so hardy nor so constant as their single brethren; nor are they much better representatives of double flowers than they are of single ones, inasmuch as we require petals instead of florets to constitute a proper double flower. It is from the single ones we should breed; and when they come, as some will, with two rows of petals, we should breed from these until we increase the number of rows of petals sufficiently to reach the centre. We shall be told this is impossible—be it so. We remember, however, to have seen in the year 1841 a beautiful collection of seedlings, some with as many as four rows of petals, smooth, thick, even and bright; and, as some of that seed was distributed, we hope if any body has been fortunate to bring good flowers, and save seed,



they will be good enough to send us a pinch. We regarded those seedlings as a race from which double flowers might be one day produced. As it is, there are two classes of flowers, the single, with a seed vessel and anthers; and what we shall call the single, with a centre of florets, falsely called double; there is a third class, which are properly called semi-double, on account of their having two, three, or four rows of petals. And, as every thing must have a beginning, and "a thing well begun, is more than half done," we will give the properties of each, that those who buy or raise seedlings may have some guide to enable them to select the best varieties.

THE SINGLE ANEMONE.

THE petals should be broad and thick, smooth at the edges, slightly cupped, forming no indentation where they lap over or join. The flower should therefore be a very shallow round saucer; the colour bright and distinct, the anthers and seed vessel small; the flower large; the stem stiff and elastic, and no matter of what length, because, if they bloomed close to the foliage, the flower would be as handsome as if it were a foot from the ground.

THE (SO CALLED) DOUBLE ANEMONE.

THE petals should be flat, but not reflexed, and one half of the shallow cup or saucer which it forms, should be occupied by coloured florets of the form of half a globe, all pointing to the edge of the flower, and away from the centre. They should differ in colour from the petals, and the more they are contrasted, the better they are. We have said nothing about the choice of colours in either of these classes of flowers, because it depends on taste; but whatever colours they are, they should be dense and decided, as if the petals were formed of coloured matter throughout, and not merely stained on the surface.

THE TRUE DOUBLE ANEMONE.

THERE should be as many rows of petals as would form a good double flower, displaying some of the inside surface of every row, and the inner row should cover in the seed vessel in the centre. The petals should be thick, broad, free from notch or serrature, and in all respects like those described first. They should all imbricate, that is, the second row of petals should exactly cover the divisions of the first, and the third should cover the divisions of the second, and so on. The flowers should be two inches across when expanded, and rise well up in the centre.

The sporting of the anemone into two kinds of flowers has been the subject of much speculation. The dahlia gives occasionally flowers after the like fashion, that is, one row of petals forming a sort of disk, and a centre filled with florets. At one time this style of flower used to be cultivated and esteemed, but after the publication of Glenny's Properties of the Dahlia, which condemned them, they are no longer grown, and it has been said that Messrs. Young, of Epsom, lost a hundred pounds, which they had expended on such varieties just before the condemnation appeared. The only double kinds ever grown were made up of petals.

The Camellia Japonica sports, like the anemone. Double flowers of two kinds may be found of several colours. Altheaflora has a single row of petals, and a centre formed of florets, and there are many that partake more or less of the character, while others come exceedingly double that are formed of petals only.

The Hollyhock is sportive, in some measure like the anemone, throwing flowers with one row of petals, forming a dish, and florets of all shapes, forming a confused heap in the centre. The hollyhock is, however, unlike the dahlia, anemone, and camellia in one particular; there are no double ones formed of distinct rows of petals, and the fructification differs widely from all, for that is like the mallow.

Anemones depend greatly on the care bestowed while they are out of ground. No root is more apt to damage by damp, and on the slightest appearance of mouldiness or mildew, they ought to be brushed, dried, and placed in very dry sand. They ought also to be kept in a very dry place.

The seed of anemone are, up to a given period, pretty safe on the stem; they burst, however, like cotton, and when one gets away, the wind will clear the whole pod in a few minutes. They require constant watching, in order to secure the whole quantity of seed.

Anemone tubers are variously sold; they used to be purchased by weight only, but of late, the foreign seed warehouses send them over by name, and count the tubers. This, however, leads to the breaking up of the tubers into pieces too small to bloom well. We observe nearly all the seed shops sell named varieties at per dozen, or hundred, instead of per pound.

It has been erroneously stated, that one of the fine double varieties, neglected for a time, will go back to a single flower, and it has been inferred from this, or rather it has been asserted by the same writer, that the single becomes double by cultivation only, and that by neglect it will go back again; this is not the fact, a plant may be starved so much that the plant will not half develope its bloom—it may come with scarcely any centre; but a double one will never become like a single one.

FLOWERING PLANTS

Leschenaultia arcuata, *De Vriese* (drooping Leschenaultia). — Goodeniaceæ § Goodenieæ.—A low, half-shrubby plant, the main branches of which are spreading, and curve downwards; and the ends of the young branches become arched as soon as the flower buds are developed; the leaves are small, filiform, and scattered; the copious flowers consist of a short tube, swollen on one side, and dividing into five segments, three of which are larger than the rest, broad, obcordate, and cleft at the end, of a sulphur yellow colour; the other two are smaller, closing over the stamens, and of a red purple colour. It is a native of the Swan River colony, Australia. Introduced about 1845, by Messrs. Lucombe, Pince, and Co. Flowers in August and September. *Culture.*—Requires a greenhouse; light turfy peat soil; propagated by young cuttings in sand, under bell glasses; must be carefully watered. (1)

Eucalyptus Priessiana, *Schauer* (Dr. Priess's Eucalyptus). — Myrtaceæ § Leptospermeæ.—A handsome tree-like shrub, growing erect, five to eight feet high, with reddish four-angled branches, and opposite elliptical vertical leaves, which are fragrant like those of the myrtle, and dark green margined with red: the flowers of this genus consist chiefly of an annular bunch of stamens; in this plant, they are an inch across, with very numerous yellow stamens, and they grow together in threes, on short stalks from the axils of the leaves. A native of Western Australia. Introduced to the Kew garden in 1845. Flowers in the summer months. *Culture.*—Requires a cool greenhouse, sandy loam and peat; propagated by half ripened cuttings in sand, under bell glasses. (2)

Cœlogyne ochracea, *Lindley* (ochre spotted Cœlogyne).—Orchidaceæ § Epidendreæ-Cœlogynidæ.—A small epiphytal plant, with small oblong pseudo-bulbs, from the top of which grow two or three lance-shaped leaves, and flower stems about a foot high springing from their base; these stems are nearly erect, terminated by a raceme of five or six moderate sized flowers, pure white in the sepals and petals, with bright orange-coloured blotches on the lip, and extremely sweet scented. A native of various parts of the East Indies. Introduced in 1845. Flowers in March and April. *Culture.*—Requires a hot moist stove, and to be fixed to a block or planted in an open pot or basket; propagated by division of the plant. (3)

Xiphidium giganteum, *Lindley* (gigantic Xiphidium).—Liliaceæ § Wachendorfeæ.—A large herbaceous Iris-like perennial plant, which when in flower is nearly four feet high; the leaves are two feet long and upwards, and between two and three inches wide; the blossoms are small, white, smooth, and arranged in one-sided racemes, closely covering the very strong axis of inflorescence. A native of Caraccas, whence it was introduced to Syon, the residence of the Duke of Northumberland. Introduced in 1844 (?) Flowers in October. *Culture.*—Requires a stove; loam, peat, and sand equal parts; propagated by division of the plant. (4)

Scutellaria incarnata, *Ventenat* (flesh-coloured Skull-cap).—Lamiaceæ § Scutellareæ.—A sub-shrubby plant, growing a foot and a half high, with erect slender branches, opposite ovate coarsely serrated leaves, and terminal racemes of numerous flowers: the flowers are of the labiate form, and of a deep purplish rose colour, and appear very ornamental. Found on the western declivities of the Andes. Introduced in 1845, by Messrs. Veitch. Flowers in July and August. *Culture.*—Requires a greenhouse, or is probably suited for flower beds in summer; light, loamy soil; propagates readily by cuttings in a slight heat. (5)

POTENTILLA ATROSANGUINEA, *var. Macnabiana* (Mr. M'Nab's Cinquefoil).—Rosaceæ § Potentillidæ.—A hardy herbaceous perennial, growing between two and three feet high, and often flowering at a much less height; it has strawberry-like leaves, and brilliant orange-scarlet rosaceous flowers, of large size, and a fine rounded cup-shaped form. It is a garden hybrid, raised between P. atrosanguinea, and P. leucochroa, in 1844, by Mr. Menzies of Halifax. Flowers during the summer. *Culture.*—Grows readily in common garden soil; propagated by division of the plant, or by seeds. (6)

VANDA BATEMANNI, *Lindley* (Mr. Bateman's Vanda).—Orchidaceæ § Vandeæ-Sarcanthidæ.—A large epiphytal plant of erect habit, producing sword-shaped, two ranked, curved, hard leaves, averaging two feet in length, and lateral half drooping racemes of flowers, each averaging two inches and a half across, and from twelve to twenty flowers in a spike. The colour of these flowers is very beautiful; in front they are of a rich golden yellow, spotted all over with crimson, and with a purplish lip; at the back they are wholly of a vivid purple. A native of the Philippines, and the Moluccas. Introduced about 1844, by Mr. Cumming. Flowers in June and July. It is also known as *Vanda lissochiloides* (Lindley), and *Fieldia lissochiloides* (Gaudichaud.) *Culture.*—Requires a hot moist stove; and should be fixed to a block of wood, or planted in an open basket; propagated by division of the plant. (7)

ODONTOGLOSSUM HASTILABIUM, *Lindley* (halberd-lipped Odontoglossum).—Orchidaceæ § Vandeæ-Brassidæ.—A handsome epiphyte, with oblong compressed pseudo-bulbs, sheathed when young by the bases of two leaves from the axils of one of which the flower stalk rises; from the top of the pseudo-bulbs spring two linear-oblong obtuse leaves; the flower stem grows from one to two feet high, bearing a raceme of numerous large handsome highly fragrant flowers; the sepals and petals are pale green, with numerous purple tranverse lines and dots, with a halberd shaped lip, purple at the base, the rest white. A native of woods in South America, between Santa Martha and the Sierra Nevada; and also in Pamplona, at an elevation of 2,500 feet. Introduced in 1845. Flowers in August. *Culture.*—Requires a moist stove; and should be grown in a pot among turfy peat, or on a block; propagated by division of the plant. (8)

PASSIFLORA KERMESINA, *var. Lemicheziana*, (M. Lemichez's Passionflower.)—Passifloraceæ. —A strong growing climbing plant, with three lobed leaves slightly serrated at the base, resembling those of P. kermesina, but larger; the flowers are very handsome, sweet scented, and growing on large footstalks, frequently in pairs from the axils of the leaves, and produced abundantly on all the young shoots; they are in the way of those of P. kermesina, but are larger and darker coloured, being of a deep crimson shaded with purple, and with wider petals, which remain fully expanded for two days; the rays are barred alternately with blue and white. A hybrid raised between P. kermesina, and P. alata (or P. phœnicea,) by M. Lemichez of Paris. Introduced to this country in 1843, by Messrs. Rollison of Tooting, who bloomed it in 1846. Flowers in September and October, and probably, like its parent, nearly all the year. *Culture.*—Requires a cool stove, or intermediate temperature; loam and peat; propagated freely by cuttings placed in a hot-bed. (9)

ZYGOPETALUM TRICOLOR, *Lindley* (three-coloured Zygopetalum).—Orchidaceæ § Vandeæ-Maxillaridæ.—A small growing epiphytal plant, with small grass-like foliage, and racemes of seven or eight flowers, which are also quite small; they are of a pale green colour, with a white lip banded with broken lines of crimson. A native of Guiana. Introduced by Messrs. Loddiges in 1843 (?) Flowers in September. *Culture.* — Requires a moist stove, and to be well elevated in pots of turfy peat soil with good drainage; propagated by division of the plant. (10)

IMPATIENS PLATYPETALA, *Lindley* (broad-petaled Balsam).—Balsaminaceæ. A herbaceous perennial with a semi-tuberous root, fleshy upright stems growing from one to two feet high, and whorls of oblong, lanceolate, sharply-serrated leaves: the flowers grow from the axils of the leaves, several to each whorl, and are large, flat, of a rich rosy colour, with a deeper eye, and a long spur. A native of Java. Introduced by Messrs. Veitch in 1845. Flowers from June to August. *Culture.*—Requires a hot moist stove when growing, and to be rested dry in winter; light rich soil; propagated by cuttings of the young shoots placed in heat. The plant loses its beauty in a dry atmosphere. (11)

HOYA IMPERIALIS, *Lindley* (imperial Hoya). — Asclepiadaceæ § Stapeliæ. — A noble climbing plant with woolly stems, narrow oblong leathery hidden veined leaves, six inches long, and large umbels of magnificent wax-like flowers, three inches in diameter, ivory white and purple in the centre. Like other Asclepiads the stem abounds in a white juice. A native of Borneo, in the territory of the Gumbang Dyaks. Introduced in 1846 by Mr. Low, of Clapton. Time of flowering unknown. *Culture.*—Requires a very hot and moist stove, and to be treated as an epiphyte, being found in Borneo growing from the decayed parts of trees; propagated by cuttings. (12)

SWAINSONA GREYANA, *Lindley* (Capt. Grey's Swainsona).—Fabaceæ § Papilionaceæ-Galegeæ.—A sub-herbaceous plant of upright habit growing two feet high, with dull brownish hoary pinnated leaves of from five to eight pairs of oblong retuse leaflets; the racemes of flower, which are longer than the leaves, grow from their axils, and are profusely furnished with large rosy-purplish pea-like flowers having a white eye. A native of New Holland on the banks of the Murray. Introduced by Capt. Grey to the Horticultural Society in 1845. Flowers from June to September. *Culture.*—Requires a greenhouse; sandy loam and leaf mould; propagated by cuttings of the young shoots early in summer, and by seeds. (13)

ACACIA MŒSTA, *Lindley* (mourning Wattle).—Fabaceæ § Mimoseæ - Acacieæ.—A branching shrub, with angulate streaked twigs, clothed with small scattered adpressed phyllodia, of oblong form, and a dull or even blackgreen, and cylindrical spikes of bottle-brush-like yellow flowers considerably longer than the leaves; they however have, and indeed the whole plant has, a singular dull and mournful appearance. A native of New Holland. Introduced about 1845. Flowers in March and April. It is very nearly allied to *A. verticillata*, and has ever been regarded as a remarkable broad short leaved variety of that species. *Culture.*—Requires a greenhouse; loam and peat; propagated by cuttings in sand, or by seeds. (14)

DENDROBIUM TRIADENIUM, *Lindley* (tubercle-lipped Dendrobium).—Orchidaceæ § Malaxeæ - Dendrobidæ. — A small epiphytal plant, with a round elongated stem, clothed with ovate-oblong obtuse leaves about two inches and a half long, and furnished with small terminal close racemose panicles of flowers; these are an inch across, transparent, nearly white, with a suffused tinge of rose, and have a violet spot on the end of the petals and lip, and a three-lobed yellow tubercle in the middle of the latter. A native of the East Indies. Introduced in 1845. Flowers in August and September. *Culture.*—Requires a hot moist stove; and to be planted in turfy peat in well drained pots or open baskets; propagated by side shoots and division of the plant. (15)

LYONIA JAMAICENSIS, *D. Don* (Jamaica Lyonia).—Ericaceæ § Ericeæ-Andromedidæ. —A moderate sized evergreen shrub, covered in every part with minute scales, most copious on the young branches; the leaves are alternate, ovate-lance-shaped, and slightly serrated: the flowers are white, ovate, with five recurved teeth, and grow from the axils of every leaf, many together, in a subracemose manner; they are extremely delicate, semi-transparent, and waxy in appearance, and have a honey-like scent. A native of the high mountains of Jamaica. Introduced to Kew about 1844. Flowers freely in June and July. Also called *Andromeda Jamaicensis*, (Swartz,) and believed to be the *Andromeda fasciculata* (Swartz). *Culture.*—Requires a cool frame and protection from frost; rough peaty soil; propagated by layers or cuttings. (16)

SCUTELLARIA VENTENATII *Hooker* (Ventenat's Skull-cap).—Lamiaceæ § Scutellareæ. —A sub-shrubby plant, with erect stems, opposite cordate-ovate, soft, coarsely serrated leaves: the flowers grow in elongated terminal racemes; they are of a bright scarlet colour, and consist of a long and slender tube, divided at the extremity, with the upper lip vaulted. A native of South America, in the mountains near Santa Martha. Introduced in 1845. Flowers from July to September. *Culture.*—Requires a greenhouse, or is probably suited for flower beds in summer; light loamy soil; propagates readily by cuttings in a slight heat. (17)

CLEMATIS TUBULOSA, *Turczan* (tubular flowered Virgin's Bower).—Ranunculaceæ § Clemateæ.—An erect sub-herbaceous plant growing two feet high and slightly branched, with large trifoliate leaves in opposite pairs, and growing on long footstalks: the leaflets are rhombeo-ovate: the flowers, which grow in axillary and terminal corymbs, are pale bluish-purple, consisting of four linear oblong sepals, at first erect, apparently forming a tube, but afterwards becoming reflexed. A native of Northern China. Introduced in 1846. Flowers in July and August. *Culture.*—Requires a greenhouse or frame; free loamy soil; propagated by cuttings or layers. (18)

ESCALLONIA ORGANENSIS, *Gardner* (Organ Mountains Escallonia). — Escalloniaceæ.—A small erect branching shrub growing from two to four feet high, with numerous oblong alternated serrated leaves, dark green with a red margin, and terminal cymose panicles of deep rose-coloured flowers consisting of five petals with erect claws resembling a tube, and a horizontal limb—altogether having the appearance of an hypocrateriform corolla. There is a variety with narrower leaves. A native of the Organ Mountains of Brazil. Introduced about 1844. Flowers in June and July. *Culture.*—Probably nearly hardy; requires a free soil of loam and peat; propagated by layers, cuttings, or seeds. (19)

EPIDENDRIUM SUBAQUILUM, *Lindley* (swarthy Epidendrum.)—Orchidaceæ § Epidendreæ-Lælilæ. — A small slender epiphytal plant, with tufted ovate pseudo-bulbs, narrow linear leaves seven or eight inches long, and small pale dull brownish flowers growing in a sub-panicled scape. A native of Mexico or Guatemala. Introduced in 1845. Flowers in September and October. *Culture.*—Requires a moist stove; to be potted among well drained lumps of turfy peat earth; propagated by division of the plant. (20)

Gompholobium venustum, *Brown* (graceful Gompholobium). — Leguminaceæ § Papilionaceæ-Podalyricæ.—A small shrubby plant, growing a foot and upwards in height, with slender, somewhat loose branches, and alternate pinnate leaves, composed of eight or ten pairs of very narrow linear leaflets; the flowers are medium sized, butterfly shaped, of a rich rose-purple colour, and grow in terminal corymbs. A native of south-west Australia. Introduced in 1803. Flowers from April to July. *Culture.*—Requires a greenhouse, sandy peat soil, and to be carefully watered; propagated by cuttings in sand under bell glasses, or by seeds. (21)

Albuca exuviata, *Ker* (Adder's-skin Albuca).—Liliaceæ § Scilleæ. — A bulbous plant, with few long fleshy, grass-like leaves, channelled above, and a spike of flowers, on a stalk shorter than the leaves; the flowers are divided into six segments, which are white, with a narrow stripe of green down the centre of each. A native of the Cape of Good Hope. Introduced in 1795. Flowers in May and June. Also known as *Anthericum exuviatum* (Jacquin). *Culture.* — Requires a frame or greenhouse, sandy loam, and thorough rest in winter; propagated by off-sets or seeds. (22)

Berberis nervosa, *Pursh* (nerve-leaved Ash Berberry).—Berberidaceæ § Berberideæ. —An evergreen low shrub, growing from two to three feet high, forming a dense tuft, with large pinnated leaves, formed of from five to eight pairs of ovate pointed and serrated leaflets; the flowers are small, yellow, and grow in dense elongated racemes often from six to eight inches long, and growing from the ends of the shoots; bears round purple berries, which ripen in July. A native of north-west America, near the Columbia. Introduced in 1822. Flowers from October to March. Also called *Berberis glumacea* (Lindley), *Mahonia glumacea* (De Candolle), and *M. nervosa* (Nuttall). *Culture.*—Hardy; will grow in any good soil, but likes peat earth; propagated by layers, or by seeds. (23)

Yucca flaccida, *Haworth* (flaccid-leaved Adam's Needle).—Liliaceæ § Aloineæ. —A low evergreen shrub, bearing tufts one to two feet high, of long lance-shaped flaccid recurved leaves, with strong thready filaments on the margin; from the centre of these rise the panicles of flowers, from three to five feet high, erect, with short side branches, and bearing numerous yellowish-white flowers, something like inverted tulips. A native of Georgia. Introduced in 1816. Flowers in July and August. *Culture.*—Hardy, or requiring very slight shelter in exposed places and severe seasons; dry deep light loam; propagated by suckers or side shoots, rarely by seeds. (24)

Uropetalum serotinum, *Ker* (late-flowering Uropetalum).—Liliaceæ § Scilleæ. —A bulbous plant, with long, narrow, grassy, plaited leaves about a foot long, and a flower stem of nearly the same height, bearing a scattered spike of flowers; the flowers consist of six segments, the three outer reflexed, the inner ones upright and reflexed at the tip, dull yellow, with a bar of brownish orange down the centre of each. A native of Spain, Portugal, and Barbary. Introduced about 1629. Flowers in June and July. Known also as *Scilla serotina* (Gawler), and *Lachenalia serotina* (Willdenow). *Culture.*—Nearly hardy; requires a frame in winter; sandy loam; propagated by off-sets. (25)

Witsenia corymbosa, *Smith* (corymbose-flowered Witsenia). — Iridaceæ. — An upright plant acquiring with age a woody stem, having sword-shaped leaves arranged in two opposite ranks with sheathing bases, and branching corymbs of flowers; the flower-stems and stalks are flat and two-edged; supporting numerous flowers, composed of slender tubes, with a spreading six-parted border, of a delicate pure blue colour. A native of the Cape of Good Hope. Introduced in 1803. Flowers from June to September. *Culture.* —Requires a greenhouse; equal parts of peat, loam, and sand, good drainage, and very careful watering; propagated by half-ripened cuttings under bell-glasses in a greenhouse. (26)

Sericocarpus solidagineus, *Nees* (solidago-like Sericocarpus).—Asteraceæ § Tubulifloræ-Astereæ.—A herbaceous perennial, growing about a foot high, forming a dense compact mass, with linear lance-shaped leaves, and small lilac daisy-like flowers, so copious as to cover the top of the plant. A native of North America. Introduced in 1699. Flowers in August and Septemher. Also known as *Aster solidaginoides* (Willdenow). *Culture.* —Hardy; common soil; propagated by division of the plant. (27)

Aster Amellus, *Linnæus* (Italian Starwort.) — Asteraceæ § Tubulifloræ-Astereæ. —A herbaceous perennial, growing about a foot and a half high, of erect habit, with oblong lance-shaped leaves, and large deep lilac-purple daisy-like flowers, which are borne at the top of the stems, and are very ornamental. A native of the middle of Europe and south of Asia. Introduced in 1596. Flowers in August and September. *Culture.*—Hardy; common soil; propagated by division. (28)

BOTANICAL TERMS,

APPLIED TO THE ELEMENTARY PARTS AND ORGANS OF PLANTS, &c.

The different parts of plants, as well as the elementary matter which composes them, are necessarily distinguished by different terms: these and their various modifications, and the different modes in which they are applied, are here briefly explained.

Aculei; the same as *prickles*, which see.

Air cell; a sort of cavity, or opening, existing in the interior of plants, among the tissues of which they are composed; they communicate with the stomates, or breathing pores of plants.

Alburnum; the sap wood of trees, or the outermost and last formed layer of the woody portion of the stem, immediately beneath the bark.

Arbor; a tree, that is a plant with perennial branches, supported on a trunk.

Arborescent; having a tendency to become a tree.

Arbrisseau; the French name for a shrub.

Arbuscula; a little tree, that is, a plant intermediate in size between a shrub and a tree.

Arbustum; a shrub, that is, a plant having perennial branches, but without any supporting trunk.

Ascending axis; a term applied to the main stem of plants, or that part around which the leaves and other appendages are developed.

Barbs; forked hairs occurring on some plants.

Bole; the trunk or stem of a tree.

Bract; a small leaf situated on the peduncle, from the axil of which a flower is developed; or those leaves which are situated between the true leaves and the calyx. In some plants the bracts are coloured and very showy; sometimes they are mere scales, and in other cases they resemble thorns.

Bristles; short stiff hairs, occurring chiefly on the stem.

Buds; scaly bodies, issuing from the axil of the leaves, or extremity of the branches, containing the rudiments of future branches, leaves, and blossoms; they are connected with the stem or branch by means of a short fleshy pedicle, in which the scales originated. The manner in which the incipient parts are folded in the buds is called æstivation.

Buisson; a French name for a low, much branched shrub.

Bulbs; scaly bodies analogous to leaf buds, they are usually produced under ground, but sometimes above, and have the power of propagating themselves by developing new bulbs in the axils of the scales. There are two kinds, the tunicated and the naked.

Cambium; the elaborated sap,—a mucous viscid layer, interspersed between the bark and the wood, convertible, and in the vegetable economy converted into tissue, for the formation of new cells or vessels, or into peculiar ingredients of which the cells or vessels may be the repositories.

Caudex; the trunk of a tree which is divisible into two distinct portions:—the caudex ascendens, and caudex descendens, the latter answering to the root, the former to the stem. Caudex repens, is the same as rhizoma.

Caulescant; acquiring a stem.

Cellular tissue; transparent vesicles, the soft pulpy mass composing the succulent parts of plants, and constituting the principal bulk of herbaceous plants, and a notable proportion of many parts even of wooden ones, especially in the younger parts.

Ciliæ; long hairs forming a fringe like an eye-lash on the margin of any part.

Collet; the point of union between the ascending and descending axis, or the root and stem; it is usually regarded as a very vital part.

Conservative organs; the organs whose functions regard merely the growth and health of the plant, that is, the root, stem, leaves, and stipules.

Cryptogamous; a term signifying hidden marriage, applied to plants without visible flowers, such as ferns, mosses, lichens, seaweeds, and fungi.

Cuticle; a membrane forming the outer covering or scarf skin of plants, found on every part exposed to the air, except the stigma and spongioles, but absent from the surface of plants which live under water. It is usually a delicate body, but is sometimes very hard.

Descending axis; a term applied to the main root of plants.

Ducts; conical tubes, differing from spiral vessels chiefly in not unrolling; their use is a disputed point.

Elementary organs; the membrane and substance of vegetable tissue in its earliest stage of growth.

Epidermis; the cuticle, or outer envelope or integument of plants, extending over their whole surface, except the summit of the pistil, and the spongioles.

Epiphytes; plants which grow upon other plants without drawing any nutriment from them; such as the majority of that singular tribe of plants, the orchids.

Fibre; an exceedingly fine hair-like portion of the tissue of a plant, which separates in one direction only: thus the woody tissue consists of fibres in close contact. The finer parts of roots are also called fibres.

Flower; a terminal bud enveloping the reproductive organs: it is usually coloured, and as such, known as the ornamental and conspicuous part of the flowering plants.

Fruit; strictly, the ovary arrived at maturity, but practically the term is extended to whatever is combined with the ovary when ripe. The matured ovary, whether esculent or not, of every plant, is regarded as a fruit.

Frutescent (*frutescens*); of a shrub-like nature or habit; *fructicans* has the same meaning.

Frutex; a shrub or plant with perennial branches, but without any trunk or main stem; *fruticulus* signifies a very small shrub.

Fulcra; properly a prop or support, and in this sense correctly applied to tendrils; but by the old botanists it was applied also to scales, stipules, bracts, thorns, hairs, and glands—parts which are not universal, nor all found in any one plant, and therefore not regarded as being essential to the idea of a plant.

Glands; minute processes of firm cellular tissue, situated on the leaves and stems of plants, and supposed to be for the purpose of secretion; their tissue is often harder and more highly coloured than that which surrounds them. There are several kinds, as the stalked, the sessile (warts), papillæ, and the lenticular gland. They are also denominated according to their forms.

Hairs; minute transparent filiform processes, found on different parts of plants, often closely covering the parts where they are met with, but at other times very thinly scattered.

Herb; a plant without a woody stem, producing annual shoots from the surface of the earth.

Intercellular passages; irregular spaces between the cellular tissue. If a parcel of oranges are placed close together on a table, and over them a second and a third tier, a similitude of these intercellular passages, on a large scale, will be seen: this is when the cells are nearly globular, and the pressure trifling; according to the amount of pressure they are submitted to, their capacity diminishes.

Lacuna; a term applied to the *air-cells;* it is also used to express the little pits or hollows which occur on the upper surface of the thallus in lichens.

Leaves; the flattened—usually green—expansions of the bark at the base of the leaf buds. Though usually flat and thin, they occur also of various forms; and though usually green, they are sometimes either variegated or coloured.

Ligneous tissue; same as *woody tissue.*

Lymphæducts; same as *ducts.*

Membrane; the thin substance which forms the walls and sides of the cells of cellular tissue, is so called; in fact, a thin skin.

Neck; the collet, which see; also t
upper tapering end, in bulbs.

Nectary (*nectarium*); the part of a flow
which secretes honey: it is also applied
various little appendages of the petals, whi
are either inner rows of petals in a state
adhesion to the first row, or modified stamen

Nectarial; of or belonging to the nectar

Organs of Vegetation; the organs who
functions affect only the growth and exte
sion of the plant, as the root, stems, leave
and stipules.

Organs of Fructification; the organs
which the propagation of the plants depend
namely, the bracts, flowers, and seeds.

Papillæ; minute transparent elongate
points of the cuticle, covering the surface
the leaves and stems of some plants, as fo
instance, the ice-plant, the peculiar crystallin
excrescences on which are papillæ.

Papulæ; a term applied to *papillæ,* whe
much elongated beyond the surface.

Parasite; applied to plants which grow
upon other plants, and abstract nutrimen
from them, as the dodders (Cuscuta sp.) d
from the plants they attack. Various fung
are parasitical, of which number rank th
mildew, the smut, and the rust.

Parenchyma; the same as *cellular tissue.*

Phænogamous; applied to plants which bear visible flowers, as distinguished from the ferns, mosses, lichens, algæ, fungi, &c., which bear no visible flowers, and are called cryptogamous. Phænogamous plants, though perhaps, not the most numerous, are the most obvious members of the vegetable kingdom.

Pores; the same as *stomates.*

Prickles (*aculei*); rigid opaque processes, terminating in a sharp point; they are unconnected with the woody fibre, and in this respect differ essentially from thorns: the sharp, sometimes hooked, bodies on the stem of a rose are prickles.

Prosenchyma; a peculiar kind of cellular tissue, in which the individual cells or bladders taper towards each end.

Raphides; small needle-shaped transparent bodies found among the cellular tissue of plants; they are said to be crystals of oxalate of lime.

Reproductive Organs; the organs by whose agency propagation is effected; the same as organs of fructification.

Root (*radix*); the part by which a plant is attached to the soil in which it grows; or to the substance on which it feeds: the descending axis.

Ramenta; scales or scurfiness of a thin foliaceous texture, found sometimes on young shoots, and very numerous on the petioles of ferns.

Seed; the part which contains the embryo;

or more properly, the interior portion of the ripened ovary, containing the rudiments of a new plant.

Shrub; a ligneous or woody plant, of smaller growth than a tree, having perennial branches, but without a distinct trunk.

Spines; indented or pointed processes, connected with the woody tissue, and which do not fall off: many leaves are spiny.

Spiral vessels; fine transparent conical tubes of spirally twisted fibres, which are supposed to be capable of conducting fluids.

Stem; that part of a plant to which the leaves and flowers are attached; the ascending axis.

Stings; slender hair-like organs or processes, containing a secreted acrid venomous fluid, which they discharge when pressed.

Stipules; foliaceous appendages situated at the base of the true leaves of many plants, and often affording a good mark of distinguishing species.

Stomates; small, minute openings or passages through the cuticle, supposed to be organs of exhalation chiefly, but also capable of imbibing such aqueous vapours as may be found floating in the atmosphere.

Tendrils; slender thread-shaped twining organs, by which plants attach themselves either to other plants or to other objects for support.

Thorns; indurated abortive buds, lengthened into sharp pointed processes, which are connected with the woody tissue, and in fact very much resemble branches. Sometimes they bear buds and leaves, as may be often seen in those of the hawthorn.

Tissue; the substances of which plants are composed are called tissues; there are three distinct sorts, cellular, vascular, and woody tissue.

Trachæ; the same as *spiral vessels.*

Tree; a ligneous or woody plant of large growth, with perennial branches, and a distinct trunk or stem.

Trunk; the main stem or ascending axis: chiefly applied in the case of trees, but strictly applicable to the main stem of all plants.

Undershrub; properly a kind of plant intermediate between a shrub and herb, differing from the former in partially perishing during winter, and from the latter in having branches of a woody texture often living more than one year.

Utricular tissue; same as *cellular tissue.*

Vaginellæ; same as *ramenta.*

Vascular tissue; simple membranous tubes, which are the vessels of plants; they are of two principal kinds, spiral vessels, and dotted ducts.

Verrucæ; warts or sessile glands produced on the surface of some plants, which gives it a peculiar kind of roughness, which condition is called *scabrous.*

Vescicular tissue; the same as *cellular tissue.*

Woody tissue (*lignin*); the solid parts of plants, consisting of membranous tubes lying in bundles, more or less compactly. It is the part which gives durability and stiffness to the vegetable fabric.

OBSERVATIONS IN NATURAL HISTORY.*

This acceptable volume is ushered in with an introduction on the importance of observing nature in all her works, and of recording all those facts which have any interest, or that appear novel. The advantage of constantly making notes of all we observe that is the least out of the common way is obvious, and in the course of time secures a collection of facts that become almost invaluable; and there are no persons who have a better opportunity than gardeners. They move in a little world of natural history. Their plagues and pests, which are almost innumerable, afford them abundant means of observation, and the necessity of finding out their habits and of becoming acquainted with their complete natural history, ought alone to be sufficient inducement. The author of the volume before us says in his introduction:—

"Let us stop to take a general view of the descriptions of facts which are wanted by the naturalist to enable him to proceed in his inquiries into the general principles upon which Nature seems to have based her system. For this purpose he must have under his view all the different species and varieties of animals with which this earth is peopled; and he ought to be able to inspect them, not merely in the dead or preserved state, but in the living or at least recently killed. Without this he can never closely investigate, or fully understand, many parts of their structure, the knowledge of which is sometimes essential for forming even the most distant idea of their true affinities. Besides this, there are many tribes of animals, especially among the lower classes, which, from their delicate organization, are scarcely capable of being preserved at all. To study these, therefore, and to obtain even the most general view of their organization, it will be necessary for him to resort to the spots where they are found. But further, in addition to a knowledge of structure, the naturalist requires a knowledge of habits. The former, indeed, is always connected with, and more or less subordinate to, the latter. And though he may sometimes infer a particular habit from a given structure, yet such inference can only be the result of having first actually observed their co-existence in a large number of instances. After all, what is more varied than the habits and instincts of different animals? How multiplied are the resources of Nature in compassing her ends! How often do we find the same object attained in as many different ways as there are cases in which the object is sought! Again, how strangely are both habit and structure sometimes modified by accidental circumstances, and by conditions affecting certain particular localities!—So that it is at once obvious, that, in order to become acquainted with all the phenomena of Natural History, a man must leave the retirement of his study, and pursue Nature into her own haunts, amid fields, waters, woods and mountains, (to say nothing of travelling into foreign climes,) or else he must have a large proportion of such facts collected to his hand by others, upon whose accuracy he can depend." —Pp. 6—8.

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* Observations in Natural History; with an introduction on habits of observing, as connected with the study of that science. Also a Calendar of periodic phenomena in natural history; with remarks on the importance of such registers. By the Rev. Leonard Jenyns, M.A., F.L.S., etc., Vicar of Swaffham Bulbeck, Cambridgeshire. London: John Van Voorst, Paternoster-row.

There is a good deal of truth in all this. A fact that may seem of no importance may form a link in the chain of circumstances and peculiarities which complete the natural history of an animal, and the want of that link may have left it in doubt. The author however takes a more enlarged view of the case. He treats of natural history as subservient to other sciences, and here there is a wide range. No one can deny that in Horticulture much depends on the knowledge of natural history, not only of plants but of the living myriads that live on them and on the soil they grow in. So it is with other sciences. Meteorology, for instance, a science almost in its infancy, may be greatly assisted by the knowledge of the habits of many living subjects. As the author says: —

" We have hitherto spoken of observations in Natural History, as made with a view to promote the advancement of that particular science, and to supply facts upon which all generalizations must rest. But some of these facts, when obtained, may be of use in other ways. They may assist in forming the statistics, as it were, of other sciences, particularly Meteorology, for which purpose they have been assiduously collected by some observers. The different times at which the periodic movements of animals take place, their times of breeding and hybernation, and many interesting phenomena of the same nature also, in the vegetable kingdom, the times of the leafing of trees and the flowering of plants, the ripening of fruits, &c.—all these are more or less connected with the progress of the seasons, and climatological considerations, and on this account are well worthy of our notice. The Calendar of Flora in the *Amœnitates Academicæ* of Linnæus is well known, and White's Naturalist's Calendar known, perhaps, still better in this country; and from the circumstance of the attention of the scientific public having been lately re-awakened both here and abroad to this subject, we have been induced to devote to it a certain portion of this work, as a guide and stimulus to those who are disposed to join in making observations of this nature. What, however, we have chiefly to say on this head will serve as an immediate introduction to the Calendar, which we propose offering to the reader in another place. We shall simply state here that the regularity which pervades nature, as regards the recurrence of periodic phenomena, is very striking. We mean not that the incidents of the several kinds above alluded to always fall out on a particular day, though no doubt the averages of many year's observations, taken at intervals, would bring them to a near coincidence. But it is rather the regularity with which they uniformly succeed each other, from which there is little deviation, that is so remarkable. Why the toad should always be a few days later in spawning than the frog;—or why the pheasant should hatch before the partridge, though the latter pairs for the breeding season long before we hear the sexual crow of the former;—or again, why the apricot should invariably flower a few days before the peach, yet generally come into leaf a day or two later; these, and a thousand other little matters of the same kind that might be mentioned, furnish much room for reflection to the thoughtful inquirer. Nothing also is more surely regulated by the seasons than the various sounds emitted by different animals, whether the notes of birds, or the cries of insects, &c., which falls so gladly upon the ears of the naturalist, indicating to him the different feelings by which such animals are actuated. The pleasure, indeed, afforded by rural sounds has been often rapturously spoken of by ardent lovers of Nature, and the poet has left us lines on that subject, the beauty and force of which have been frequently alluded to :—

Nor rural sights alone, but rural sounds,
Exhilarate the spirit, and restore
The tone of languid nature,

* * * * * * *

Ten thousand warblers cheer the day, and one
The livelong night: nor these alone, whose notes
Nice-finger'd art must emulate in vain,
But cawing rooks, and kites that swim sublime
In still repeated circles, screaming loud,
The jay, the pie, and ev'n the boding owl,

> That hails the rising moon, have charms for me.
> Sounds inharmonious in themselves and harsh,
> Yet, heard in scenes where peace for ever reigns,
> And only there, please highly for their sake.
>
> *The Task.*

But we are here speaking of the sounds of animals as simply indicating the progress of the seasons. It has been said, and it is not far from the truth, that if an observant naturalist, who had been long shut up in darkness and solitude, without any measure of time, were suddenly brought blindfolded into the open fields and woods, he might gather with considerable accuracy from the various notes and noises which struck his ears what the exact period of the year might be. Some instances of a remarkable coincidence in this respect will be found mentioned in the body of this work."—Pp. 14—16.

The introduction teems with good advice and good feeling. There is a pleasant quiet tone in all the lessons which it imparts. It may be studied with advantage by all classes, and by none with more real benefit than the growers of flowers, fruit, plants, and vegetables. A man for instance should know every state of whatever insect troubles him in his business, from the almost imperceptible spider to the destructive grub and caterpillar, for it is only by knowing every peculiarity that he can effectually rid himself of many of those things which are highly injurious, and it will be found as necessary to know something of the larger animals, for he has enemies in many forms. He cannot therefore be too observant. As the author says in the twenty-fifth section of the introduction :—

"It may be useful to young observers, to say a few words in reference to the best manner of *searching for facts* in Natural History. —When a traveller reaches a new country, or one which has seldom been visited by naturalists, almost everything he meets with will be new also, and at every step he is called upon to register some fact or other. There are here scarcely any directions necessary beyond what have already been given. He must have his eyes and ears open, and with pencil in hand faithfully record whatever falls under his observation. Often too in unexplored regions, there is no difficulty in watching the habits of animals, from their being unaccustomed to man, and under no fear at his approach. Where this is the case he possesses great advantages, and has an opportunity of seeing more of their ways, as well as seeing more surely. But this seldom happens anywhere ; and in thickly inhabited countries the observer must exercise great caution and address, or even have recourse to stratagem, in order to become acquainted with the objects of his search. Of course this remark is not applicable to the collecting of facts respecting the lower animals, which are often stationary, and quite indifferent to being watched. Here the observer may immediately resort to those localities, which are tenanted by the particular tribes he wishes to study. But as regards quadrupeds and birds, with which principally the greater number of persons occupy themselves, they are generally not to be approached without stratagem : and if they are species frequenting plains or other open places, this is unavoidable. Also, if the observer is collecting facts for the history of any particular species, he must follow up that species wherever it is to be met with, and must exercise care and ingenuity, as well as a perpetual watchfulness, in getting acquainted with all the particulars of its life. But if our researches are carried on in a woodland district, especially in our own country, and we are not particularly interested in one species of animal more than another, we would strongly recommend, or at least as an occasional practice, the taking our station in some particular spot, and, instead of going to look for objects, noting down whatever occurs, which we consider worthy of our regard. Sometimes in this manner we shall have our attention called to little matters, which, by being always on the move and on the look out for more striking facts, we should have long continued to overlook. In the dearth of larger animals, or in the intervals between their drawing near enough to be observed, we shall naturally look closer into what is at hand, if it is only to while away the time. And there is no spot so barren of life as not to afford insects and other minute creatures, whose ways and actions will amply reward the curiosity of such as deign to bestow their attention upon them. Many a naturalist, when standing under a tree to shelter himself from a passing shower, has been led to the observation of facts, connected with the smaller animals, or the more concealed processes of vegetation, or perhaps to the discovery of some new species of lichen or fungus, which, but for this accident, he might never have noticed. And to return to the case of the observer in the wood, he will gain an advantage over the larger animals by being himself stationary. It often makes a considerable difference whether you approach them, or they you. They are much more easily frightened in the former case than in the latter ; and less easily induced to resume their freedom of manner, after the interruption caused by having their retreat suddenly broken in upon. Add to which, there is always the chance, when moving about, that we disturb some bird or quadruped which, till the moment of surprising it, we did not observe, and which not only takes the alarm itself, and instantly hurries away to be seen no more, but at the same time gives the alarm to others, and causes a general desertion of the locality we are traversing."—Pp. 40—42.

With regard to the body of the work it confirms a large collection of facts without any particular order. These facts are for the most part of a nature to be hardly called common. They have some novelty or singularity about them. Many are valuable, as indeed all facts are when just published. Some of these are interesting to all classes, others are valuable to a particular class. There is no general history of anything. We select two or three instances which are as good as a thousand.

"*Aphides.—Oct. 3d,* 1822.—This morning on rising we found the air completely choked with *Aphides*. The steps at the house-door, and even the very walls, were black with them. On walking out, myriads alighted upon one's clothes; and getting also into one's eyes, ears, and nose, proved an intolerable nuisance. In the middle of the day I took a circuit of about three or four miles from home, but found the quantities of these insects the same wherever I went. A friend, too, who arrived from Cambridge, distant about eight miles off, assured us that they were in equal plenty there. Where could these prodigious multitudes come from, and whither were they directing their flight? Such questions are easier asked than answered. It is worth noting that the day was particularly mild and calm for the time of year, and had begun with a fast mizzling rain, which lasted for a considerable part of the morning. At 4 P.M. the thermometer was as high as 64°. The wind was easterly, and had blown steadily from that quarter for three or four days previous."—P. 283.

"*Red Spider.*—In the summer of 1844, the gardener at Bottisham Hall directed my attention to a peach-tree infested with the red spider. The tree had a very diseased appearance; the leaves were red and spotted on their upper surface, and fell prematurely, stimulating the tree to put forth new leaves from the next year's buds, and so subjecting it to great exhaustion. On examining the leaves through a microscope, they were found to be infested with a very minute mite, scarcely bigger than the point of a pin, of an oblong-oval form, with eight legs of not very disproportionate lengths, but the anterior pair a little the longest; the body of a yellowish-orange-colour, some specimens redder than others, and some with an oblong dark spot on each side of the abdomen; the legs pale whitish, and transparent; two eyes, one on each side of the anterior part of the body, forming a bright red spot. These mites were in all stages of growth, and had evidently been bred upon the leaves. The young were more pale-coloured than the adult, which were often deep red; the former were also much more bristly than the latter, the hairs seeming to wear off with age. Here and there might be discerned (more especially on the young leaves that were prematurely forced, as above mentioned,) clusters of minute globules that appeared to be eggs. There were also, on the tree, great numbers of *aphides*, which appeared to have had some share in bringing it into its diseased state; and also a few of the larvæ of what was supposed to be a *Hemerobius*, preying upon both mites and aphides, empty skins of which were scattered everywhere upon the leaves. This mite is no doubt the *Acarus telarius* of Linnæus, so called from a thin filmy web which it spins, and with which it mats the under side of the leaves of the trees it frequents. Such a web I discovered upon the leaves in question; but the threads of which it is composed are so extremely fine, that, when single, they can be with difficulty perceived, except under a high power of the microscope. The web alone must injure the health of the leaves, independent of the punctures made by the mites themselves, which last were distinctly seen in some instances inclining forward the anterior extremity of their bodies, and plunging their rostrum into the leaf to feed. The mites run upon the threads of their web like spiders, but not very swiftly; off the threads their motions seem impeded, and upon a smooth surface like glass it is with some difficulty they move at all. When once a tree has become much infested with this parasite, its cure is next to hopeless. In the present instance, the tree had shown the disease year after year; and there was nothing to be done, as I was told, but to cut it down, which has since been effected. Some have recommended frequent sprinklings with cold water, at least for plants in hot-houses, which are often attacked by these insects; but this remedy is not a certain one, nor to be relied on as permanent in its effects. In the case of fruit-trees labouring under this disease, the leaves are constantly falling, and carrying with them to the ground numbers of the mites, which either ascend the tree again, or, if it be late in the season, harbour under stones, &c., near its foot, till the ensuing spring."—Pp. 293—295.

"*Extraordinary swarm of flies.*—During the month of September, in the year 1831, a small dipterous insect, belonging to Meigen's genus *Chlorops*, and nearly allied to, if not identical with, his *C. læta*, appeared suddenly in such immense quantities in one of the upper rooms of the Provost's Lodge, in King's College, Cambridge, as almost to exceed belief. The same species of fly, or one closely approaching to it is not uncommon in most houses towards the decline of the summer; but in this instance their numbers were so great, and their appearance so sudden, as to surpass anything of the kind I had ever before witnessed. It was not till after a fortnight had elapsed from the time of these insects being first noticed that I had an opportunity of seeing them myself, during which interval their numbers had been greatly thinned by fumigations of tobacco and other substances employed as a means of destroying them; nevertheless, they were still in immense profusion, and my informant told me that in the first instance the greater part of the ceiling, towards the window of the room, was so thickly covered as not to be visible. The exact day of the month on which these insects first showed themselves was not noticed, but, as far as could be remembered, it was about the 17th of September. They appear to have entered the room very early in the morning, by a window looking due north, which had been open during a part of the night, being first observed between eight and nine A. M. A few were noticed in the adjacent rooms facing the same way, although, comparatively speaking, in no great quantity; perhaps, in consequence of the windows of those rooms not being opened at quite so early an hour. None at all, however, had been seen in the house previously to that day. We are at present so ignorant of the habits and economy of the minuter tribes of insects, that it is not easy to give an explanation of this phenomenon. It would be interesting to know whether the above had been all bred in the immediate neighbourhood, and at the same time, or whether they were swarms that had collected from different quarters for the purpose of migration. Many facts are on record which seem to confirm the idea that insects do occasionally change their quarters in immense bodies; and some have occurred to myself, which I have no doubt, were connected with such a circumstance, not only from the large numbers of the insects observed, but from the steadiness of their flight, and their continually persevering in one given direction. It is worth noticing, with respect to the present case, that King's Lodge is situated close to the river Cam, which at that place runs nearly due north and south; and it is just possible that this circumstance may have had some influence in directing the movements of these insects. I find also, by referring to a journal of the weather, kept in the neighbourhood of Cambridge, that, about the time when they were first observed, the wind was N.N.W., and that it had been blowing steadily from that quarter for four successive days."—Pp. 275—277.

From these it will be seen that there is no connexion in the facts; they are isolated and independent; they may or may not have been observed before; perhaps in some instances recorded and published before, but for the most part they are certainly new. The work may be looked upon as a book of instruction, one which may be read with advantage by persons of all ages; as good for the school as for the library, if it were only for the introduction, which we confess we like better than the facts. It is neatly printed and well got up, quite after the usual style of the publisher, Van Voorst.

PLANTING AND MANAGEMENT OF TIMBER.

There would seem to be little or no difference at first sight between planting fruit and planting forest trees; but, in one respect, they may require treatment so different as not to seem like the same operations. For instance, the orchard *must* be had, the wood *may* be had, the orchard *must* have the particular fruit trees required for use, the wood *may* have the trees which best suit the soil; the soil, if improper for an orchard, *must* be removed to be replaced by that which is proper, or mixed, and changed in its properties to suit the tree placed there; and when we have done all we can to suit the trees, they must grow until their roots find their way through the prepared ground, and touch the ungenial soil, when they will begin to decline: the larger the hole filled with proper soil, the longer the tree will last, and provision must always be made for a succession. But preparation of soil for timber trees would be ridiculous. Fruit trees may be renewed every ten years if it were required; one set of trees under another might be produced without difficulty; but for timber trees, which are to stand a century, artificial means are worse than lost time; so long as the roots find room in the prepared soil the trees flourish, so soon as they reach the native soil they feel the consequences. If the native soil be congenial, all the artificial means will have been useless; and if not, the trees fail after the loss of all the years they may have been planted. The answer to this may be, perhaps the means were not sufficient; our reply is, no purse would be equal to an extensive plantation in artificial soil sufficient to perfect the timber. But let any one who desires to plant, consider that which will best suit the soil; let the growth be natural, and it will be permanent; make it artificial, and though it may flourish long enough to get the steward called a clever fellow, the sons and grandsons of the owner will find stunted unhealthy timber fit only for fire wood, and too slow of growth to be worth keeping for that. We repeat that it is widely different in the case of fruit trees ; every year repays the trouble of artificial planting, and if they required to be renewed at the end of ten years, still would it be worth the toil and expense. But there are other cases in which planting artificially may be desirable ; namely, in parks and ornamental grounds. The effect has to be produced, and it is as necessary to prepare the ground properly, at whatever cost may be required, as it is to prepare the foundation of the mansion properly to carry the superstructure. But for planting on a large scale artificial soil is out of the question, because it is but little use to secure the first ten or fifteen or even twenty years of health, if it must be followed by canker and decay. There is no difficulty in determining as to the choice of trees ; but let them have no manure, no driving, no temporary excitement; let the ground be loosened, and indeed trenched, if it will bear the operation, whether the trees chosen be elm, oak, plane, chestnut, birch, the firs, or any other, or a mixture of all; have the plants small, for one of the worst errors committed in forcing plantations is the planting of trees too old for the purpose. The disadvantage of too large a plant is great. In the first place, it is sure to have suffered more in the moving ; in the second place, it must be staked, or it will be disturbed by the first slight breeze ; in the third place, there is more labour attached to the work in any stage. It is impossible not to foresee all these things ; but there is yet another disadvantage worse than all, the losses by failure in the growth; the two-year old seedling would, in time, overtake the very best of the plants moved at a greater age ; small plants come up with good roots, they are not affected by the wind, they begin to grow directly because they receive no check, and they are in every way likely to make better plants and better timber. Connected with this subject we subjoin a system of arboriculture, and especially of pruning, by Mr. Gavin Cree, whose experience is equal to that of any man in the United kingdom. The subject is treated scientifically, and as such, may be studied with advantage. Mr. Cree says,—

Scientific arboriculture may be defined, "The culture of wood conducted on physiological principles, or a knowledge of the organs which constitute the internal and external structure of trees, and of the various functions these organs perform through the instrumentality of external agents." These are generally treated as if they were inorganic matter, they are operated on as the ploughman operates on the ground, or as the carpenter or blacksmith on the wood or iron under their hand. Many eminent men have written treatises on vegetable anatomy and physiology, and many have promulgated their sentiments on the pruning of forest trees, while neither party understood how the science of vegetable physiology ought to direct the mechanical operation of pruning, so as to make it affect, to the greatest extent, the growth of the tree. There is in trees as in animals a vital power which presides over all their functions. This power is the agent by which the ascent and descent of the sap is produced, and certain internal and external causes facilitate the exercise of the phenomenon. Among the external are to be ranked the influence of air, heat, light, and moisture ; and it is to be admitted that there is strong attraction between air and water; for no air is found without water, and no water without air ; and the system of operating on the lateral branches by shortening them. I shall give an outline of the principles which led me to the conviction that the system of pruning by shortening the lateral branches, which I brought forward a number of years ago, is calculated more than any other system to secure for the benefit of the tree an extra nourishment. The organs of nutrition or vegetation have one common object, to support the life in the vegetable, and the powers of these organs may be greatly increased by mechanical means. In order to use these means in a way to assist nature, some knowledge of the physiology of plants is requisite ; the director or operator must understand how the organs exert their functions, otherwise he cannot reasonably expect to be successful. The different processes of the sap or vegetable blood must especially be carefully studied, as by it the growth and vigour is sustained. The sap is acquired and influenced in diverse ways.

In spring, the small spongelets or extremities of the roots absorb the fluids and gases from the soil, which are conveyed by an inherent power depending on the life of the tree ; or, more properly, the ascending sap is acted on through the roots by atmospheric pressure, up through the capillary tubes till it reaches the extreme ramifications of the stem, shooting forth buds and expanding

The common sap having extended over all the branches, it mingles with the fluids absorbed by the leaves, and losing the watery and aëriform principles which are useless for nutrition, by evaporation, it returns down the vessels of the bark, and in its course deposits cambium, which forms the annual rings of wood which extend to and strengthen the extremities of the rootlets, whereby they are made to extract more nourishment from the soil through the season ; and as the two saps commingle in the leaves, the descending sap which has not been deposited, in like manner mixes with that extracted by the rootlets, and is again carried up with the ascending sap.

How to economise these fluids for the advantage of the tree is next to be considered. It is obvious, then, that when the upper lateral branches are shortened to half the length of the leading stem, and the others proportioned, the sap has lesser superficies to cover than when they are allowed to extend to an improper length and thickness; in consequence there is a greater supply for every part of the tree, and as other fluids, such as water moving in a channel, acquire additional momentum when augmented, greater vigour and velocity of movement is imparted to the sap by the abundance of quantity; and so great is the beneficial effect resulting therefrom to the tree, that from the extraordinary size, and healthy and brighter green foliage which clothes the branches, it attracts more than three times the nourishment ordinarily imbibed from the atmosphere, under different management. The branches which are shortened always remain slender; by reason of the small superficies of the branch, and the rapidity with which the sap moves, very little of it is retained by the branch, and of course nearly the whole is deposited in the body of the tree, and the foliage remains nearly a month longer on the tree, which accounts for the wonderful rapidity of growth effected by this method of pruning.

The smallness of the branches is of advantage likewise, when it is necessary to prune close to the body of the tree, as the wound made by that operation is proportionally small, and may be expected to cicatrize in the course of three years. It may be worth remarking, that if the branches are properly shortened, the trees never become what is improperly termed hidebound.

It has been found that trees will advance in height and circumference as much, taken averagely in six years, if the branches are shortened, till a tree is 18 feet in height, and 15 inches in circumference, as they will in 15 years, if they are not shortened; and the more a tree is pruned up close to the stem before it is 18 feet in height, so much is it retarded in height, that trees in many cases of considerable age that are in an unhealthy state will be brought round by the shortening the branches.

Mr. Gavin Cree has been in practice very successfully for many years; and it is something in favour of his system that it has always answered well with him. Others have published their notions as to the proper way of managing fruit trees: Mr. Thurtell, of Norwich, has on two or three occasions lectured on the subject; once before the Royal Botanical Society; and, on some future occasion, we shall give the substance of his plan. It is quite clear that there are many ways of accomplishing the same end: the mischief is, that many people attend to part of the instructions, and do not carry out the whole—they adopt parts of two systems, and spoil everything.

AN ABSTRACT OF REPORTS, PAPERS, AND PROCEEDINGS OF THE HORTICULTURAL SOCIETY OF LONDON, WITH NOTES BY A PRACTICAL GARDENER.

FOOD OF PLANTS.—The first point of science to be known by gardeners is, what constitutes the food of a plant. This is ascertained by examining its chemical condition. What it contains is what it feeds on. Plants have many kinds of food, the first of which in importance is charcoal. Charcoal varies greatly in its appearance, according to circumstances. The diamond is charcoal in its purest state, and charcoal is often combined with other bodies, whose appearance would least indicate its presence. Loaf sugar is composed of charcoal and water. Starch consists of a considerable quantity of solid charcoal. Oil of turpentine (carbon and hydrogen) contains charcoal. Charcoal may also exist in the form of air or gaseous matter; the most important of which is carbonic acid, or a combination of charcoal and oxygen. But although these substances contain more or less charcoal, they do not all possess it in a fit state for entering into the composition of plants. Those substances only can be beneficially applied as food which contain charcoal in a form capable of being taken up through the skin and leaves of plants. Oil of turpentine is not food for plants, although it contains charcoal. Sugar and starch are, when internal, but not when external, partly because solids cannot be taken up. It is necessary that they should be dissolved, which readily takes place in the tissue of plants. Sugar, however, might be used as external food, in minute quantity, if it were worth while. Charcoal itself is not fit food for plants until it becomes gaseous. This is the form in which nature herself provides it. From three to eight per thousand parts of the air we breathe is carbonic acid gas. It is the heavy gas so destructive to animal life, often found at the bottom of wells and mines. It is supplied in considerable abundance from decaying animal or vegetable matter; but the great source of supply is the animal kingdom. Indeed there is, perhaps, no arrangement in the whole economy of nature more beautiful than that observed in relation to this gas. It maintains the equilibrium or balance of the animal and vegetable world. What is thrown off from the lungs of the animal kingdom as poison to it is food in its best form for the vegetable world. But notwithstanding the immense quantities exhaled from the lungs of animals, the atmosphere contains but a small quantity, as was before stated, and hence the importance of giving motion to the air in hothouses. For plants feed through their leaves and skin, as well as by their roots, and it is obvious that air passing quickly over the surface of a plant will part with its carbonic acid in greater abundance than when it rests upon the absorbing surface in tranquillity. The roots require that air containing carbonic acid should have the freest access to them, on which good potting greatly depends, as does the operation of draining, which derives a large part of its advantage from the freedom with which carbonic acid can find its way to the roots of plants through the numerous chinks and crevices that lead the water into the drains.—*Dr. Lindley's Lecture.*

ON TRANSPLANTING PEAS FOR EARLY CROPS.—It has been a rule with some of the old gardeners for manyyears to transplant their first crops of early peas. I have been in the habit of doing so for thirteen years, very successfully, with my first early peas, and also with my first large late peas. Our practice is very simple; the compost we use is as free from rotten dung as we can get it, the peas are sown in pots all over the surface, and the pots are placed either in cool frames or in moderate heat, as may be deemed necessary. The time of sowing depends on the season, the earliest is about the middle of January; at the time of planting, the ground which has laid in ridges during the winter is first levelled down, and trenches are then cut through it by line, somewhat sloping, in the same way as for planting box, and deep enough to admit the roots of the plants without bending them. The peas are turned out of the pots, and about two inches of the bottoms cut off before the plants are separated, and in parting them care is taken to keep them in tufts of about four or six laying them into the trenches, and filling up with the natural mould, if dry enough; but if not, with some mould which has been kept dry. I have now one long row of the frame pea, planted, as described, on the third of last month, which is three inches high, while another by the side of it, sown in the natural way, and which had made its appearance above ground before the others were planted, are very little more than one inch high. Mr. Knight recommends poor light soil for transplanted peas, but I differ from him by experience; for when I have planted peas without manuring the border, my crop has been very inferior. I find when transplanted peas do not thrive well, that they are very apt to bring small pods not half filled.—The above is the substance of a letter by Daniel Judd, F.H.S.; and in a note the secretary observes, "Mr. Knight's object in surrounding his transplanted peas with a poor and light soil, is to check the luxuriance of growth, and consequently to induce early maturity. The quantity of produce would certainly be increased by using a rich soil, as proposed by Mr. Judd but this increase would be at the expense of the earliness of the crop, which is the main point to be gained by the practice recommended.

[This, like everything else, requires a middle course. The poor soil would risk the loss of the crop altogether: the rich would go to the other extreme; the sowing should be in poor soil, and the planting out in better, but not over rich.]

TOBACCO WATER FOR DESTROYING INSECTS.—The tobacco liquor I have used is procured from the tobacco manufacturers. In the process of preparing tobacco for use, the dried herb is steeped for a certain period, and the water which it has absorbed is afterwards expressed from it, into the water in which it had been steeped. This liquor is to be purchased at eight-pence or ten-pence per gallon from the manufacturers, and should be obtained as pure as possible without adulteration. One gallon of the liquor is stronger than any that could be made from steeping several pounds of prepared tobacco in the same quantity of water. The mixture of the tobacco liquor with water is in the following proportions, and should be applied to the trees by means of a garden engine, or syringe, taking care, in its application, that it is given so forcibly that the under side of the foliage is well sprinkled. For the destruction of the green-fly, I mix one gallon of tobacco liquor to five gallons of pure water; this quantity is sufficient to wash three trees, twelve feet high, and each extending fifteen feet in breadth. For destroying the black insect, one gallon of liquor to three of water. For destroying the caterpillars on pear, apple, plum, and apricot trees, and on gooseberry bushes, one gallon of liquor to four of water. The above proportions have been frequently tried, and have never failed of success.—*Letter by Mr. J. Harrison.*

FORCING GOOSEBERRIES AND CURRANTS.—I have uniformly succeeded in ripening gooseberries and currants in peach-houses, in pots: in the beginning of November I select healthy year-old plants, and pot them in the size called twelves; these are then plunged to the rim in a border, and covered with any loose material, to protect the roots from frost. Towards the end of January they are removed into the peach-house, and by the end of April the fruit is ripe, and may be sent to table, growing on the plants. A succession crop is secured by taking another set of pots into the peach-house in the middle of February.—*Letter by Mr. James Hay.*

FORMATION AND MANAGEMENT OF FLOWER GARDENS.

By a flower garden, as distinguished from what is called pleasure ground, is understood a detached spot, occupied entirely by beds of flowers, intersected by gravel walks, or walks formed of turf, kept closely cut, and sometimes a mixture of the two. The latter plan is preferable when it can be accomplished, because most available for all seasons.

Flower Gardens of this class, usually are, or should be entirely detached from other scenery, by hedges, plantations of dwarf shrubs, or other appropriate living fences. They therefore should consist of three parts:—the boundary fence, the walks, and the flower beds.

General Preparation.—In regard to the general preparation of the ground, the flower garden requires the same kind of attention as any other department. Thorough drainage is essential as a preliminary: next the amelioration or improvement of the staple of the soil, assimilating it as nearly as possible with what are called free sandy loams; and then the disposal of the surface into beds of various forms suitable for the intended purpose, each of which should appear appropriate and pleasing in itself, and still more so, as forming part of the whole. The series of beds forming a flower garden of this kind, should always form a regular and connected design, and above every other consideration, they should not be crowded too near each other.

The surface of a flower garden may often be varied with good effect: thus, instead of being level, it may form a slope, or a series of steps or terraces; or, if large enough, the ground may all slope towards the centre, by which the whole of the beds can be better seen than under any other arrangement.

Laying out.—It is necessary to provide a working plan upon which the form of the beds should be indicated to scale by some person competent to judge of their effect, when transferred from the paper to the ground, as it frequently happens, that the designs which are most pleasing to the eye in the form of a drawing, are not so on the ground. Those designs, which, in practice, are found to give most satisfaction, and to be most suitable for gardening purposes, consist of pleasing combinations of round, right angled, or blunt angled forms, arranged so as to appear complete as a design, without being crowded. Especially if on grass, this latter point should be considered, the effect and relief of broad spaces of green among the gayer masses of the flowers, being particularly effective; and besides this, as the grass will have to be frequently mown, narrow, or confined strips of turf are excessively inconvenient: in fact, it is impossible to mow them properly without injuring the flowers. The space between the beds ought never to be less than three feet wide. The centre of the group may appropriately be occupied by a fountain, a sculptured figure, a dial, or any object of a similar nature. It is as well if the design provides an equal width between the beds, throughout, but this is more essential in the case of gravel walks than when the beds are laid down upon grass.

The design having been drawn on paper to a large scale, and marked all over with parallel lines at right angles, at the scale of a yard apart, or wider if the beds are large and not intricate; corresponding parallel lines indicated by string, should be temporarily placed down on the ground, after it is made perfectly even on the surface. Both the plan and the ground will now be covered with little squares, the sides of which are a yard in length. The next step is, to measure with the compasses from (the angles chiefly, of) these lines on the plan, to the lines which indicate the outside of the different beds, and the compasses being applied to the scale, and the distances ascertained, the same lengths are to be measured on the ground with a light rod, and marked by means of light pegs of about two feet long. The same process has to be done in every direction, till the dimensions of each bed are sufficiently indicated to enable the operator to fill up the figure by the eye. The laying down of the design consists in thus going through the whole of the beds, and measuring the distance of their projection from the square guide lines, and marking it on the ground by means of the pegs. The lines must be identical in their position, both on the paper and on the ground; this is secured by starting from some fixed object which admits of being indicated with accuracy on the paper, and can be measured from in laying down the lines; thus the straight line of a walk or of a building affor a good starting point or base line, and thi being secured, it is only further necessary t make all those parallel to it quite true, and t take care that the cross lines are placed exactl at a right angle with the others. When th whole design is accurately indicated in thi way on the ground, the lines may be removed and the pegs be adjusted by the eye, so as t exactly represent the straight or curved line they are intended to indicate, for this is rarel done with accuracy in first setting down th pegs, some getting put an inch on one sid the true line, and some an inch on the other these irregularities are, however, easily rectified by the eye, but of course not more tha one or two pegs should be taken up at a time and these should be replaced before other are removed.

Thus far, the proceedings would be th same, whether the garden was to be forme with gravel pathways, or laid down on grass but here the operations differ. If the bed are to be formed on a lawn already made, th next step will be to cut away the turf fron the part which is to form the bed, not approaching at first to within three or four inche of the marginal line. If the turf is require to be used elsewhere, it should be cut o evenly and carefully, in straight pieces of foot wide and two or three feet long; but i it is not required, it may be dug in, and wil serve to improve the soil. After the diggin up of the soil, the edges may be cut accuratel to the line marked; but after this is done, grea care must be taken that the edge is not trodden down. The original surface will no form the pathways between the beds. As regards the soil, if the natural earth is of ba quality, it must be taken out and renewed tw feet deep, with rich, sandy, loamy soil. Th drainage, as already stated, must be made perfect. If the soil is of good quality, it shoul be trenched two feet deep, and a portion o fresh soil added to give the bed a slightl rounded surface. If of medium quality, som of the worst, which is usually the lower part should be taken out, and fresh soil added, an well mixed with what is left of the old soil In either case, if this be done, manure wil not be required: indeed, manure is dangerous in a flower garden if inconsiderately applied; and therefore it is better to renew th soil from time to time as it gets exhausted than to apply a great quantity of manure.

When the pathways are intended to be o grass, and these, as well as the beds, have t be formed, the surface should first be mad even, and the beds marked out as already explained. Then the part which is intended t form the bed must be dug up, and the soi renewed, if necessary, as just explained. Th parts which are to form the pathways between the beds, are then to be covered with turf. This is done in the following manner:—First, have the surface well worked over with the spade, and all the lumpy parts of the soil chopped to pieces and broken quite fine, and the whole made even in accordance with the natural level or inclination of the ground. If the soil is very dry, it should be well watered as the turves are laid down. They are to be laid down close together, and quite even, and two or three inches on each side wider than ultimately required. They are next to be beaten down firmly with what is called a turf-beater; this is a heavy slab of wood with one smooth face, about a foot broad and two feet long, with a handle long enough to be used by a man standing upright, set diagonally into it at a proper angle, to fall perfectly level and lit upon the surface of the turf at each stroke; with this, the turf is to be beaten down firmly and evenly. The soil in the beds is to be trenched up, and got into order; and as a last operation, the edges of the turf are to be cut evenly to the line indicated by the pegs, and the soil then finally adjusted for the reception of the plants.

When the flower garden is to consist entirely of beds and gravel walks, a somewhat different course is necessary. In this case, however, the preliminary operations are the same, an even surface being necessary to facilitate the work, and the design or plan requiring to be marked out on the ground by the same process as in the other instances. But in this case, preparation must be made for planting round the beds, or to indicate the division between the walks by some distinct and permanent edging, of which the most universal, the neatest, and the best of live edgings, is the dwarf variety of the box tree, known as Dutch box by gardeners, (*Buxus sempervirens suffruticosa, or nana.*) The box edging is planted by making the soil firm, and quite even, and then cutting down a sloping bank, the top of which is to occupy the exact marginal line of the bed, and the bottom is to slope a little outward; this may be six or eight inches deep, according to the length of the box to be planted against it; the box is then set against this, a few inches at a time, thinly, and very evenly, both as regards thickness and placing the tops level, and is thus held by the back of the left hand, while, with the other, a sufficient portion of earth is drawn up to fix it firmly in this position: more earth is then added evenly with the spade, the whole is gently trodden up, and the walk formed by the addition, first of coarse stones or brickbats, and then of coarse gravel with a layer of fine gravel on the surface, which is made nearly level with the box at the edges, and *slightly* rounded in the centre. The edgings are sometimes formed of dressed stone, of slate, or might now be made of glass; but in either case they should be light, and about two or three inches high, and placed down, so as to indicate accurately the figures of the several beds

This work of laying out, or disposing of the ground, may be done during any interval of fine weather in autumn, winter, or spring. Such work cannot be well done when the soil is at all adhesive from moisture, nor when the soil is frozen. In any open weather, during the period referred to, when the soil is comparatively dry, it may be carried on. As the spring season is, however, very much occupied by operations of culture, it is usually most convenient to get work of this kind forward during the autumn, or the early part of winter.

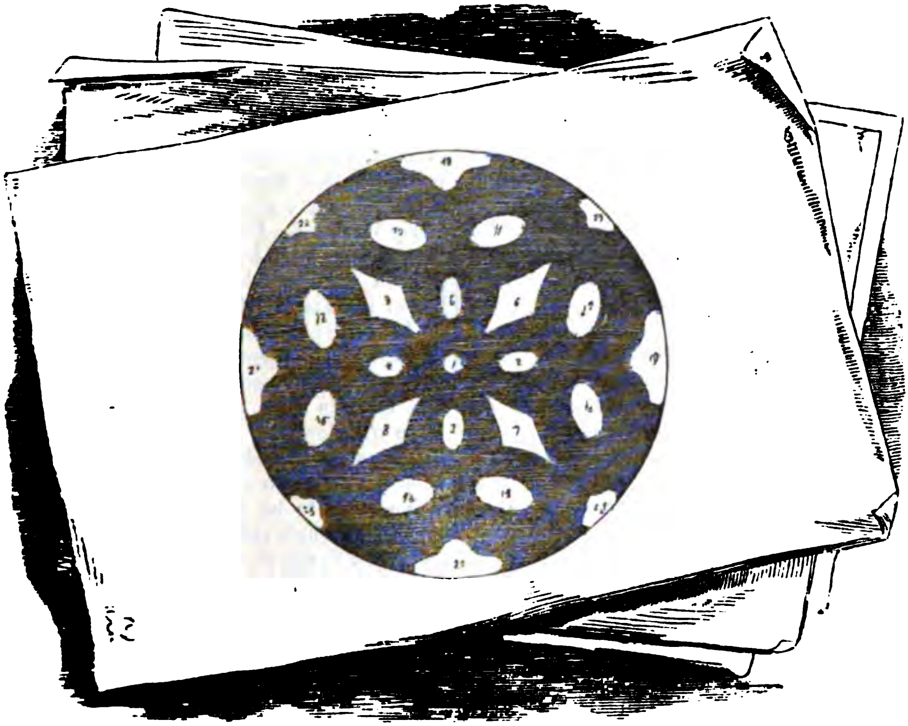
Soil.—For the cultivation of flowers, the renewal of the soil to a certain extent annually is preferable to the use of manure. There are places where this can be done; and, in such cases, the benefit will be apparent. It is done thus:—About a third of the bulk of soil provided for the plants, or say a depth of eight inches is removed entirely; the same quantity of fresh loamy soil, of the same light texture as that at first employed, and procured from a common waste or pasture, is then returned in its stead; this, and the remainder of the soil in the bed, is then well stirred and mixed together until it is thoroughly incorporated, when it will be ready to receive the plants at the planting season. In gardens where this cannot be done, a portion of *thoroughly decomposed* manure, (that of cows, if possible,) should be added annually, and mixed up with the soil in the same way, which, in either case, is to be laid up roughly in ridges to the action of frost during the winter.

Of course, this system of managing the soil, can only be practised where the modern plan of filling the beds with half-hardy plants during summer is followed. Wherever the beds or borders are filled with permanent herbaceous plants, mixed with roses and similar shrubs, it will only be practicable to dig up the surface roughly between the plants, and let it lie in this state during winter. Sometimes, even in the former case, the beds are filled up for the winter with dwarf evergreen shrubs in pots; and for spring flowers, with various bulbs and other early blooming plants planted between them: when this is the case, there is little opportunity of exposing the soil to the action of the weather, with a view to its becoming sweetened and pulverized, and hence arises the necessity of substituting fresh soil, which, in this case, should be done in autumn, before the spring bulbs are planted. When there is not the means of absolutely renewing the soil every year, if there is a spare corner where the soil can be laid, and frequently turned over in summer and winter, and enough can be procured to fill the beds twice, the same soil, after being so turned over, may be used on alternate years, and will thus last for several years, being sufficiently improved by the exposure to answer nearly every purpose which fresh soil would secure; whilst the only expense would be the labour attending its being removed and replaced, and that involved in turning it at intervals during the whole year in which it would be unemployed. Unless something of this sort can be done, full success in the modern system of flower-gardening cannot be realized, for no application of manure of any kind will compensate for the freshness and aëration of the soil which is thus secured.

The soil of a flower garden is very easily made too rich by the application of manures; and when this is the case the plants grow rank and luxuriant, and generally do not bloom well. And thus it is that the application of manure to the old soil is never productive of such satisfactory results as the renewal of the soil. In cases where the latter is out of the question, it will be necessary to use some manure from time to time, perhaps annually. None, however, should be employed which is not thoroughly decomposed, and no kind is preferable to that of cows, or in place of this, the decayed manure employed for hot-beds. The artificial manures, such as guano, and the various saline manures, are too powerful, and though they may sometimes be used with advantage, yet they are dangerous in the hands of the uninitiated. Generally speaking, these latter are best applied in the form of liquid manure during the growing season. Of the decomposed manure, a sufficient dressing would be secured by a layer of four or six inches thick; this should be evenly spread over the surface, and then the whole mass of soil, to the depth of eighteen inches, should be turned over, and the manure thoroughly and carefully incorporated therewith. If the beds are filled during winter and spring, this should be done in the autumn, before the spring flowers are planted; but if the beds are allowed to remain empty during the winter, as they may be in entirely detached gardens, though it may be done at the same time, yet the process will differ, inasmuch as it would then be desirable to lay the surface up in rough ridges, which would require to be forked down level in the spring when the beds were planted.

General Management.—The management of a bed or border of miscellaneous plants is simple. At the time of planting, the dwarf kinds should be kept near the edges, while tl taller ones are placed behind them, the tall being quite at the back of all the rest. Tl first set of plants, growing six inches hig may be six inches from the margin, or o foot, if of a spreading or procumbent hab Plants of a foot or so in height may be set foot behind these, and alternating with the Those growing two feet or so, should eighteen inches behind these, and opposite t front ones, and so on to the back part of t border. The distance between the plants the ranks should be about the same as fro the other rows of plants, the object being give each plant, according to its size, a fa proportion of space. Mixed borders of th kind generally get out of regular series in short time; when additions are made, it oft happens that they are put in, in the most op parts, without much regard to arrangemen and so that something like the proper positi is thus secured to the plant, it is quite as w or better than planting them formally. I deed, if any attempt is made to range them the series, which, for the sake of illustrati has been pointed out, formality must strictly guarded against, the larger and mo spreading plants being allowed more roo than close upright compact growers. Su gardens as this, are usually furnished wi a proportion of herbaceous perennials, whi are, as it were, fixtures; and the interm diate spaces are filled out by a few bulbs i spring, by self sown or autumn sown annual or by half hardy annuals reared in frames i spring, or hardy ones sown at the proper tim where they are intended to grow, by dahli reared in heat in spring, and by the hal hardy greenhouse plants, which are more esp cially brought into requisition by the moder grouping system. Besides planting, the a tention required is mere routine;—the plan must be supported as they require it, the d caying flowers, leaves, and stems removed the annuals entirely cleared away when pa flowering, and the tender plants taken up i autumn and dealt with according to the nature, either stored away or thrown awa as may be required in each case. Waterin must be attended to in dry weather. Th branches or flowers must be thinned if the become crowded; the permanent plants take up and reduced when they get too large; an the vacancies in other cases filled up, as the occur, with such plants as may be available.

The modern style of flower gardening, i which plants—usually of a better class—ar grown in masses of larger or smaller exten differs materially from the foregoing. I order to explain its nature, we must suppo the annexed diagram to represent a group c beds forming a parterre, or flower garde either on a lawn or on gravel, the manner of filling which with different classes of plants we will now proceed to detail. It may be proper to remark, that the selection of plants may be made very different according to taste; and in the case of a greater number of beds having to be filled, any appropriate additions might be made to the plants here named. This is a matter which may be almost infinitely varied as the fancy of the planter may dictate. The selection here given is believed to be a very good one, but is certainly offered more for the purpose of illustrating the principle upon which such gardens are arranged and managed, than as furnishing an exact model for imitation.



The centre of the design is supposed to be occupied by a fountain, a dial, a statue, a pedestal with vase, or any similar fixed architectural and ornamental feature: this is indicated by No. 1. Nos. 2, 3, 4, and 5, are small beds, to be filled with dwarf plants of corresponding habits and varied colours. Nos. 6, 7, 8, and 9, again, correspond in some degree in the planting. Then follow a series of oval beds, Nos. 10 to 17, which should also correspond in the style of plant selected. Nos. 18, 19, 20, and 21 are again corresponding beds; and so are the smaller intermediate ones, indicated by the Nos. 22, 23, 24, and 25. All these groups of beds, while they must be filled by plants of varied colours, should each, as far as possible, contain plants of the same relative size and habit of growth. The selection now remains to be detailed.

No. 2 is to be planted in October, for spring flowering, with *crocuses* (light blue variety); these should be set in patches of five or six roots pretty close together, the patches being about nine inches apart; they will come into flower in January and the early part of February. In March, patches of *Collinsia grandiflora* (purple and blue), sown in pots in autumn, and kept through the winter in frames, and well hardened, are to be planted between the patches of crocus, the leaves of which may be tied together in little knots; these, if sown early in autumn, will be considerably advanced, and will come into flower in April, and continue throughout May. In May (or earlier) the roots of the crocuses may be taken up, and laid in to ripen in a reserve garden, their place being now (in May) supplied by *Gazania uniflora* (lemon-coloured), raised from cuttings in August, and kept through the winter and spring in the greenhouse and frames; these will come into flower in the course of June, and will last throughout the summer and autumn.

No. 3 is to be planted in October with *crocuses* (dark blue variety), set in patches as in No. 2. Soon after the blooms of these are past, or early in March, *Valerianella congesta* (lilac) may be planted between them, having been well hardened previously; these are to be sown in pots in September, and kept in frames, and will be in flower probably by the end of April, and last throughout May. The crocuses may be tied up, and taken up as in No. 2. In May, the bed is to be planted with *Saponaria ocymoides* (pink), a few rough pieces of stone being placed round each plant; these should have been raised from cuttings in the latter part of the summer previously, and will soon be in flower, lasting a long time, probably throughout the months of June, July, and August. If the plants go out of flower by the middle of August, the beds may be temporarily filled by any small growing plant, of which a sufficient stock may be on hand.

No. 4 is to be planted in October with *crocuses* (large yellow variety), managed as in No. 2. These are to be succeeded in March by *Lasthenia glabrata* (yellow), sown early in September in pots, and kept in a frame; this will flower in April and May. In May the place of the crocuses is to be taken by plants of *Tropæolum minus* (orange), raised from seeds in February, in the greenhouse; the shoots of this plant must be kept pegged down to the surface, and the leaves thinned a little; it also requires *poor soil* to flower freely, or what will serve the same purpose, a spade thrust into the soil all around, and rather near it, so as to cut some of the roots and thus check it; this may be done two or three times, as seen to be necessary. It will probably commence flowering by the end of May, and last till October.

No. 5 is to be planted in October with *anemones* (scarlet poppy-flowered), in patches at nine inches apart; these will flower in February and March. In the latter month, *stocks* (scarlet ten weeks) raised in pots in August, and kept in frames, should be planted between them; these will bloom in April and May. In May the anemones are to be removed to the reserve garden, and their place occupied by *Nierembergia filicaulis* (white), raised from cuttings in August, and kept in a greenhouse in winter; this will bloom from June till the end of summer.

No. 6 is to be planted in October with *hyacinths* (single blue variety—L'ami de Cœur), nine inches apart, the bed edged with a row of yellow *pansies*, raised from cuttings in August, and planted at the same time as the hyacinths. The pansies will bloom from February onwards; the hyacinths in April and May. In February the spaces between the hyacinths are to be planted with *Nemophila insignis* (blue), sown in pots early in September, and kept in cold frames; this will most likely flower in March, and last through April into May. In May the hyacinths are to be taken up as soon as the bloom is past, and carefully laid in, in the reserve garden; their place is then to be taken by *Agerat* *cœlestinum* (pale blue), raised from cuttin in August, kept in frames during the winte and now placed a foot apart: the edging pansies may be removed and substituted by bluish-lilac coloured variety of *verbena* (Am thystina); these plants will both bloom fro June to October.

No. 7 is to be planted in October, at ni inches apart, with *tulips* (double yello variety—Yellow rose), edged with dark purp coloured *pansies*, raised from cuttings August, and planted in October. The pansi will come into bloom in February, and con tinue onwards; the tulips will bloom in Ma Early in March, *Yellow lupines*, sown in po in August, and kept in frames, should planted between the hyacinths; these wi bloom in April and May. Towards the en of May the place of the tulips may be take by *Scarlet pelargoniums* (Frogmore variet or Huntsman), raised in the previous summe and kept in the greenhouses and frame these will flower from June to October. Th bed may be edged with a row of a whi variety of *verbena* (the Queen).

No. 8 is to be planted in October, wit *hyacinths* (single red variety—Paix d'Amien as in No. 6, edged with cream-coloured *pansies*, raised from cuttings in August, an planted in October. The pansies will be i flower from February onwards, and the hyacinths in April and May. By the beginning o March the bed may be filled between the hyacinths with *stocks* (scarlet ten weeks), raised i pots in August, and kept through the winte in frames; these will bloom in April and Ma In May, the hyacinths are to be removed as i No. 6, and substituted by *Ageratum cœlestinum* (pale blue) raised from cuttings in August, and kept in frames during winter. Th pansy edging may be substituted for one o an orange-scarlet variety of *verbena* (Kyle' Speciosa). Both will flower from June t October.

No. 9 is to be planted in October, wit *hyacinths* (single white variety—Grand Vainqueur), as in No. 6, edged with light lilac blue *pansies*, raised from cuttings in August and planted in October; they will bloom as i No. 6 and 8. In February, the bed shoul be planted between the bulbs with *Gilia tricolor* (lilac), sown in pots early in Septembe and kept in a cold frame; this will, probabl come in by the end of March, and continu through April and part of May. In May th hyacinths are to be removed, and the be planted with *Scarlet pelargoniums* (Genera Tom Thumb) placed a foot and a-half apart these should be raised from cuttings, the previous summer, and kept in the greenhouse an frames through the winter. This bed ma be edged in place of the pansies, by a row of a pink-flowered variety of *verbena* (Beauté Suprême). Both will bloom from June to October.

No. 10 is to be planted, as in No. 6, with *hyacinths* (double blue variety—Lord Wellington,) edged with yellow *crocus*, planted in October, in patches of four or five, the patches at six inches apart; these will flower in January and February, and the hyacinths in April and May. In February the beds may be planted between the hyacinths, with *Gilia achillæfolia* (blue), sown in pots early in September, and kept in frames in winter; this will flower in April, May, and June. In May, when the hyacinths are removed, the beds are to be planted with *Calceolaria rugosa* (yellow), raised from cuttings in August, and kept in the greenhouse through the winter; it will flower from June to October.

No. 11 is to be planted in October with *tulips* (single yellow), as in No. 7, edged with purple *crocus*, planted as in No. 10; the crocus will bloom in January and February; the tulips in May. In February the spaces between the tulips is to be filled with *Collinsia bicolor* (white and lilac), sown in pots early in September, and kept in frames; this will bloom in April, May, and June. In May the space occupied by the tulips is to be replaced by *Cuphea platycentra* (scarlet), raised from cuttings in August, and kept through the winter in the greenhòuse and frames; this will bloom from June till October.

No. 12 is to be planted in October with *Polyanthus Narcissus* (white variety—Grand Monarque,) at nine inches apart; the bed may be edged with light blue *crocus*, planted as in No. 10; the crocus will flower in January and February, the narcissus in May. In February this bed is to be planted with *stocks* (purple ten weeks), raised in pots in August, and kept in frames; these will bloom in April and May. In May, the place of the narcissus which are taken up and placed in the reserve garden, is to be occupied by the *old variety* of *Petunia violacea* (purple), raised from cuttings in August, and kept through winter in the greenhouse and frames; this will bloom from June onwards to October.

No. 13 is to be occupied by *Tulips* (Tournesol—double scarlet and yellow), planted as in No. 7, with an edging of yellow *crocus;* the former flower in May, the latter in January and February. In February, the spaces between the tulips to be occupied by *Nemophila insignis* (blue), raised in pots early in September, and kept in winter in frames; this will bloom in April and May. In May, the place of the tulips is to be taken by *Lobelia ramosa* (blue), sown in August, and kept in the greenhouse through the winter; these will bloom in June and July, and may be succeeded by another crop, sown in February, to bloom later in the season.

No. 14 is to be occupied by *hyacinths* (double red variety—Waterloo), planted as in No. 6, edged with white *crocus;* the latter bloom in January and February, the former in April and May. In February, the bed is to be planted between the hyacinths, with *Coreopsis Drummondii* (orange yellow), sown early in September, in pots, and kept in a frame; it will bloom in May and June. In May, the place of the hyacinths is to be taken by *Calceolaria viscosissima* (orange yellow), raised from cuttings, in August, and kept in the greenhouse and frames; it will bloom from June to October.

No. 15 is to be occupied by *Fritillaria præcox* (white), planted nine inches apart, in October, and edged with light blue *crocus*, the latter blooming in January and February, the former in April and May. In February the spaces between them should be planted with *Nemophila atomaria* (white), sown early in September in pots, and kept in frames; this will bloom in April, May, and June. In May the fritillarias may be removed to the reserve garden, and their place occupied by *Heliotropium peruvianum* (lilac), raised in August from cuttings, and kept in the greenhouse in winter; these will flower from June to October.

No. 16 is to be occupied by *Polyanthus Narcissus* (yellow variety—Soleil d'Or), planted as in No. 12, and edged with light striped *crocus*, which flowers in January and February, the narcissus in May. In February this is to be occupied with *Godetia rosea-alba* (pink), sown in August, to flower in May and June, followed in May by *Silene pendula* (rose-pink), taking the place of the narcissus, and blooming from June till September, the silene is to be sown in pots, at the end of September, and kept very airy in a cold frame.

No. 17 is to be occupied by *tulips* (double red variety—Rex Rubrorum) planted as in No. 7, and edged with white *crocus*, the latter blooming in January and February, the former in May. In February it is to be planted between with *stocks* (white ten weeks) sown in pots in August and kept in frames; these will bloom in April and May. In May, the place of the tulips is to be taken by *Agathæa cœlestis* (pale blue), raised from cuttings in August, and kept in the greenhouse and frame; this blooms from June to October.

No. 18 is to be planted in October with patches of *ranunculus* (Scarlet turban), nine inches apart, the patches consisting of about half a dozen roots placed near together; these bloom about May. The bed may be edged at the time of planting with double *snowdrops*, which will flower in January. In February the bed may be planted over thinly with *Clarkia pulchella*, sown in September, kept in a frame to flower in April and May. In May the place of the ranunculus, which are to be taken to the reserve garden, is to be occupied by *Gladiolus natalensis* (orange mottled), which, if potted in spring and brought forward in the frames, will flower finely in July and August. This bed may have an edging of *mignonette*, planted out in March, and a succession crop sown at the same time.

No. 19 is to be planted in October with patches nine inches apart of *Anemone hortensis* (rosy-purple); it will flower in April and May; the bed may be edged with *snowdrops*, as in No. 18. In February, fill between the plants with *Godetia rubicunda* (rosy), sown in September, to bloom in May and June. In May, as soon as the anemones are out of flower, they must be removed, and their place taken by *Tigridia pavonia*, planted in pots in February, and brought forward in a frame; these will bloom from June to September. The bed may be edged with *mignonette* as in No. 18.

No. 20 is to be occupied by *ranunculus* (Yellow turban), planted as in No. 18, and edged in the same way with *snowdrops*, the latter blooming in January, and the former in May. In February, the bed is to be planted between the ranunculus, with *Collinsia bicolor* (white and lilac), sown in August, in pots, and got forward in the frames; this will bloom in March and April. In May the bed is to be planted in place of the ranunculus with *Gladiolus floribundus* (pink), potted in spring, and brought forward in frames to flower in June and July. The bed may be edged with *mignonette*, as in No. 18.

No. 21 is to be planted in October with patches of *Anemone apennina* (blue), at nine inches apart; this blooms in March and April; it may be edged with *snowdrops*, which flower in January. In February it may be planted with *stocks* (scarlet ten weeks), raised in pots in August, and kept in frames; these flower in April and May. In May, the anemones are replaced by *Gladiolus cardinalis*, potted in spring, and brought forward in frames, so as to flower in June and July. The bed may be edged with *mignonette*, as No. 18.

No. 22 is planted in October, at nine inches apart, with strong plants of *hepaticas* (double and single blue alternately); these bloom in February and March. It may be intermixed or edged at the time of planting with *Scilla bifolia rubra* (pink), which blooms in March and April. In May, it may be planted with *verbena* (purple variety—Emma), raised from cuttings in August, and kept in frames, and grown on so as to be nearly or quite in bloom; these keep flowering till October, or till destroyed by frost.

No. 23 is planted in October with *Winter aconite* (yellow), intermixed or edged with *Cyclamen coum* (red), the former blooming in January and February, the latter in March. Early in May, *verbenas* (lilac variety—Lovely Rambler) may be planted out as in No. 22.

No. 24 is planted in October with *hepaticas* (double and single red), intermixed with *Scilla bifolia* or *amœna* (both blue), the former blooming in February and March, the latter in March and April. In May, the bed may be planted with *verbenas* (scarlet variety—Melindres major), as in No. 22.

No. 25 is to be filled in October with *double snowdrops* (white), intermixed with *Hyacinthus amethystinus* (blue), the former blooming in January, and the latter in April. In May the beds may be filled with *verbenas* (crimson variety—Tweedieana), planted as in No. 22.

In November and December, which are thus unprovided with flowers, the liveliness of the flower-garden is in some measure kept up by plunging small evergreens in pots, between the bulbs. A selection of choice kinds of evergreens, including the different variegated plants, and accompanied by others with various coloured berries, forms a very good substitute for flowers at that season.

There are two or three general remarks in connexion with this system of planting flower-gardens, which it may be desirable to make. In the first place, where it is recommended to plant out any of the plants in February, this is presuming on the recurrence of fine weather, and the planting out should only be done under such circumstances; in addition to which, if it becomes very cold afterwards, some protection at night must be afforded. Another point is, that all the plants brought from the greenhouses, or frames, to the flower-garden, must be perfectly "hardened off," as it is termed; that is, they must by degrees have been so perfectly inured to exposure as to be able to bear it without injury, before they are risked in the garden. Another point is, that the different kinds of plants must not be allowed to spoil each other by being crowded; where they are getting too thick they must be thinned, as far as may be necessary, the less important crop being sacrificed to the better. In general, the batch of annuals planted in February, are to be regarded as the make-up crop. Especially at the edges of the beds, if any shoots are growing beyond the proper bounds, they must be cut in, so that the outline of the beds may be preserved; this is very essential. Also if any branches grow up too high among the rest, they are to be shortened down in a similar manner, so as to keep the groups dwarf, symmetrical, and compact. Finally, if any of the sets of plants happen, as they sometimes will, to grow faster than was calculated on, and pass out of flower before their allotted time, or if their proper blooming season does not quite extend to the end of summer, in either case, some temporary crop of such plants as may be at hand, must be planted to supply the deficiency.

The most correct system for geometrical flower gardens is, to plant the groups, so that every corresponding bed may present the same kind of plant, and the same colour, and the only objection that can be urged to this plan is, that as there are at least two beds of each kind of flower, there must be less variety in the whole. On this arrangement, Nos. 2 and 4 in the diagram given above, Nos. 3 and 5, 6 and 8, 7 and 9, 11 and 14, 10 and 15, 12 and 16, 13 and 17, 19 and 21, 18 and 20, 23 and 25, 22 and 24, would be filled with the same identical kinds of plants. When the flower garden is seen from any elevated position, when it can be easily comprehended in one view, this mode of planting is desirable, and very effective; but if the garden is not so viewed, it is really of little importance, because, when the beds are seen only from the same level, the effect of such an arrangement, not being taken in at one view, is lost sight of, and the system thus becomes virtually ineffective.

No one who has a flower garden, and values its productions, should be unaware that success is impracticable in the vicinity of large trees. Flowers will not thrive under the shade and drip of trees, neither will they succeed if the trees are so close, so as to prevent a free circulation of air. Again, if they are at all near, their roots work up into the better soil, made for the flowers, and rob it of its virtues, often completely occupying it with their matted roots. This happens to a much greater distance than could be supposed. Elm trees are very hurtful in this way. Though hardly doing injury by its shade, yet on account of its thickly matting roots the lilac is very destructive to flowers; if the roots once gain access to the better soil of the flower border, the latter will soon be filled with a close matted cluster of its roots, which will successfully rob the plants of all their nourishment, and starve, if not destroy them. Many other trees and shrubs are injurious in the same way; and they often do this injury when they are so far off as to be unsuspected.

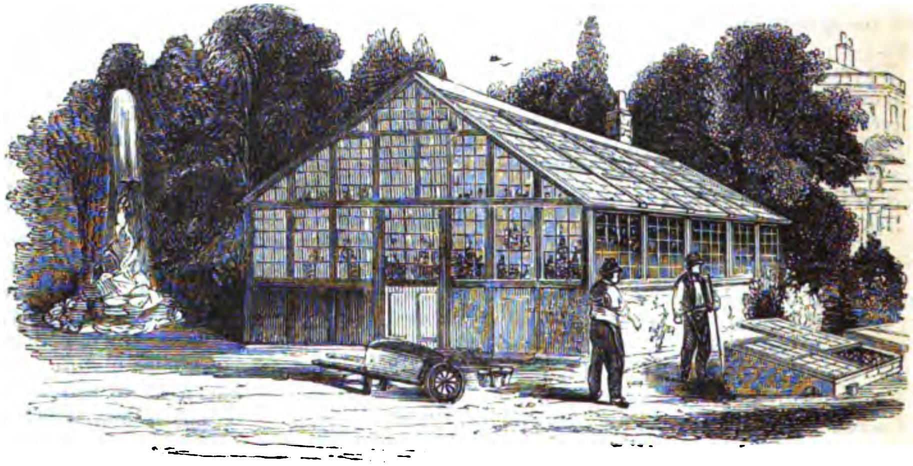
Conservative walls.—Walls for the protection and shelter of many half-hardy plants, and the choicer climbing shrubs, are a valuable acquisition to the flower garden. Where there is a terrace walk facing the south, portions of wall, on the north side of this walk, are very appropriate for the purpose; and in small suburban gardens, where the whole area is surrounded by a wall, that portion attached to the ground, occupied by flowers, ought to be devoted in this way. The southern aspect is, in general, preferable; but where more than one aspect can be obtained, the season of any particular flowers may be prolonged, especially if the plants are managed with such a view.

The principle or advantage of a conservative wall is, that the wall acts as a protection from cold, and in some measure elevates the temperature; consequently, with the additional covering of light shutters or blinds, fixed with rollers to let up and down, a sufficient degree of protection is afforded for the cultivation of such plants as are too tender to endure our winters. Plants of this nature, planted out with this object, should not be mixed with those of a hardier character, as the protection afforded to the former would injure, rather than benefit the latter. Each of these classes of plants should therefore be confined to certain portions of the wall, the best situations being afforded to the most tender. This principle of protection may be carried out in a variety of ways, and in different degrees; in short, the protection afforded may vary from the slightest that can be adopted to the covering of the wall with glazed sashes, which latter would provide nearly as much shelter as a greenhouse. By far the most essential part of the plan, so far as regards the growth of half-hardy and tender plants, is to have the soil rendered comparatively dry by thorough drainage. In this respect the preparation of the soil for such a purpose is very similar to that of forming borders for fruit trees, only the drainage should, if possible, be still more perfect. In the preparation of the soil, too, there is some similarity, for a highly manured soil is hurtful in both cases; in fact, fresh soil of an open texture is much more proper, inasmuch as it will secure a moderately healthy and solid, rather than an over-luxuriant and watery growth, such growth being far more likely to be preserved through the winter.

In the case of such ornamental walls, the plants should be trained on a trellis, and not nailed directly to the wall, the former being a much neater, and less troublesome plan. The plants are all supposed to be planted out into the prepared soil, and the shoots trained assiduously until the space is filled, when they should be allowed to grow more unrestrainedly, being pruned on the spur system, so as to throw out a number of short shoots from the wall; this will break the formality apparent in trained plants, and will in most cases secure abundance of bloom. Such situations are not, however, intended solely for climbing plants; others of a shrubby and evergreen nature are quite appropriate, and as an instance the Camellia may be mentioned; these plants would bloom to perfection in such a situation. The various plants must not be allowed to interfere with each other's growth, nor the strongest to overpower the weakest; each by the free use of the pruning knife, and the judicious removal of the growing shoots, must be restrained within its proper bounds. In general, the climbing plants may occupy the upper part of the surface, while the shrubby plants fill up the spaces near the base. In some instances where these walls have been erected, and glass sashes provided, flues have also been built in the walls, connected with furnaces situated at the back: when this is done the situation is fully equal to a greenhouse, and any plants usually kept in a greenhouse might be planted.

One of the most complete walls of this kind is that at Chatsworth, in Derbyshire, where the experience of some years has proved highly successful. This wall has the appearance of being formed of alternately receding and projecting compartments, supported by massive pillars. The receding parts are those which are protected, the others being covered with hardy plants. At about a foot and a half from the front of these recesses, a glazed sash is placed, which, when in its place, covers the plants, and when not required is made to slide behind the projecting compartment; thus the plants can be covered or exposed with very little trouble. Of course the same principle of covering might be carried out with canvass or other screens less expensive than glass; or protection might be afforded by the less ornamental plan of employing blinds to be let up and down at pleasure by means of rollers; this would do very well for many plants, though of course not for the very tender kinds, because as the blinds would more or less exclude light, they could not, without injury, be continued over the plants for any length of time, as might be necessary in severe weather.

Without any other shelter than that afforded by the wall itself, aided by the complete drainage of the soil, a number of the most beautiful half-hardy shrubs introduced to this country, and which are just too tender to stand our winters when planted out openly, might be grown so as to form very interesting objects. Such plants are the half-hardy species of Berberis, of Magnolia, of Escallonia, of Clianthus, of Clematis, of Rosa, of Arbutus, of Chimonanthus, of Ceanothus, of Lonicera, and many others. Such plants should be planted while young, and trained so as to cover the wall.



BUILDINGS FOR HORTICULTURAL PURPOSES.

As many persons are deterred from building greenhouses and conservatories by the expense, or rather the supposed expense of their erection, it ought to be generally known that by going a proper way to work there is hardly an excuse for being without these luxuries, (for such we deem them,) in any moderate garden. It is true that those persons who set themselves up as builders of such concerns, and who would make it appear that there is something peculiar that takes them out of the ordinary builder's business, do charge very exorbitantly for all kinds of horticultural buildings; and where money appears to be no object, they do not forget to throw a good deal of cost into certain features which are no improvements, and which add no single advantage to the concern. By adopting circular forms and domes, by arranging designs so as to cause irregular cutting for the glass, by bringing in subjects out of the usual size, and using material that is difficult to procure or work, it is very easy to swell the cost of anything; and it becomes simply a question of a great expenditure or none, for the party who wishes to build; and often ends in their declining altogether to have anything of the kind erected.

Let us, then, see how economically we can build a greenhouse and a conservatory, and we will reduce the thing to lines and figures, so that our readers may add the cost of carrying material, and of the labour on the spot, to put them together, and so see how much it would cost them; or they may find builders on the spot, to complete the whole, without having any portion from London.

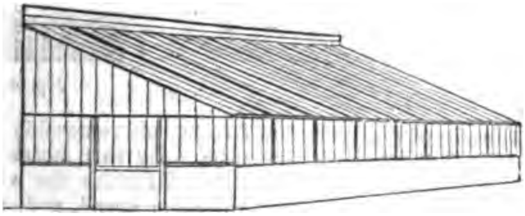


Fig. 1.

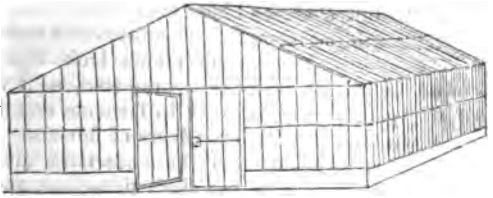


Fig. 2.

There are to be had many carpenters who are clever at such work, and who will execute the woodwork of any of these buildings at one shilling per foot. Suppose, therefore, we calculate that a lean-to greenhouse, *Fig.* 1, has three feet of woodwork upright in front, and two six-feet lights from back to front, and three feet six inches wide, and that there be ten of these lights side by side to make the length of the house, which would then be thirty-seven feet. Suppose the tops are sloped so as to give us ten feet for the depth of the house, there would then be, three times 37 feet, (111) for the upright front, and twelve times 37 feet (444) for the roof, and say sixty feet for each end (120). The doors will add about 20 feet. We now get at the total number of feet, which is 695, which number of shillings, thirty-four pounds fifteen shillings, gives us the carpenter's work. We will reckon the glazing of the roof, or 444 feet, at 4½*d.*—eight pounds three shillings and twopence, and the rest of the glass, 231 at 8*d.*—seven pounds fourteen shillings. There would be wanting the price of the bricklayer's work only to complete this building, this depending a little upon the price of the material in the locality, for sometimes the distance the bricks have to be drawn makes a good deal of difference; but the height of the brickwork, say eighteen inches in the ground, and two feet six out of the ground, together four feet, with the ends fifty-seven feet in length. This should be nine-inch work; say it will cost ten pounds, making sixty pounds, and under sixty-one. The heating of a house like this would require a conical boiler, say three pounds; and eighty feet of pipe, at eighteen pence, six pounds; and fixing, say two pounds more. Here, then, is a first-rate range of greenhouses, thirty-seven feet long and ten feet wide, for about seventy pounds, as handsome as it can be built, and all complete. A conservatory, *Fig.* 2, the same length and double the width, and with glass to the bottom, may be reckoned at double the sum, and no one could doubt of the effective appearance of this style of building for both. The annexed sketches of a greenhouse and conservatory will give an idea of the buildings alluded to in the foregoing notice. The prices mentioned are quite the outside, and include all the fastenings, hinges, and necessary means of heating. The filling up of the inside is so completely a matter of taste, that it is impossible to say what would be the cost, until the intended plan is known. The best way to fit up a greenhouse is with a table or rack in front, two feet wide, and shelves the form of the roof at the other side of the path. *Fig.* 3.

The conservatories may be fitted rather differently, for the object there is to make it a sort of winter garden. There should be a broad walk all round, laid with the finest binding gravel. The centre should be prepared for planting, and the borders should be glass, which is the most neat and elegant, as well as lasting of all borders. As the glass of the windows reach to within a trifle of the ground, there may be a rack or shelf one foot wide even with the bottom of the glass.

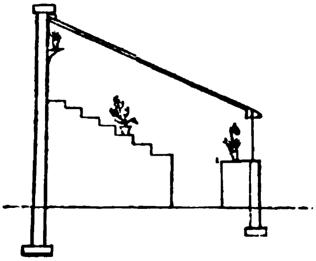


Fig. 3.

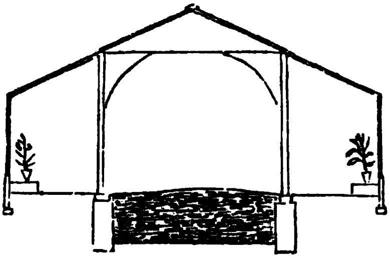


Fig. 4.

Under this rack should be placed the hot water pipes for heating, a gutter being formed just below the surface to make room for them. This shelf or rack is to hold pots of blooming plants, with which it should be kept supplied. The ties which are necessary across the roof, and pillars which are usually placed at given distances, are so many useful supports for climbing plants, and the centre bed should be planted with much more regard to after-effect than any we have seen, for even that at the Horticultural Society is crowded with coarse, worthless subjects, which are damaging or banishing altogether much better things. A section of the conservatory would be something like *Fig.* 4. The path round might be of marble or Portland stone, but it is better to have it like the principal gravel walks; and with regard to the planting, the middle should have the tallest subjects, not at the moment they are planted, perhaps, but those which are naturally tallest, and which are sure to go up. Camellia japonica, a few of the choicest kinds; Azalea indica according to their habit, the tallest in the middle. Nearly all the hard-wooded plants of the Cape will do well, but a choice should be made of those that will be most effective.

The conservatory is used by many as a common greenhouse, and the plants in pots are crowded into it for the winter; but the luxury of the conservatory is absent altogether, unless it is heated as a winter garden. The centre should be dug like a border, and some plants should be put out as if they were shrubs in the open ground; others may be plunged in pots for the sake of their bloom while in flower, and be removed for others as they pass their bloom; but the conservatory should be supplied by means of other houses and pits with plants coming into perfection, and removable when their beauty has gone. By this means it may be kept one mass of flowers the whole year round, and especially grand and imposing during the winter months, when the Camellia japonica, with its random flowers, begins lighting up the houses, which even without forcing, but with a little management, can be produced flowering in abundance. All other early spring subjects can be hastened to bloom in winter; and summer flowering plants can be easily forwarded to bloom in spring. There are some things, however, so beautiful in themselves in all their stages, that they deserve a place in the conservatory as permanent plants, and may be planted out in the centre beds to remain. Of these the Camellia japonica is one of the most striking, and three or four of the best kinds should be selected. The Azalea indica, Hovea Celsi, and a few others known to succeed well in such situations, should be planted out; and there are some few climbing plants worthy of a place in the very best selections. This, however, only explains the reason for some of the provisions made in a proper conservatory; our notions are that span buildings should have ties, and these ties may be made subservient to our purposes, for climbing plants look best when allowed to run across the roof, as it were, and hang, as they will, in festoons, and their ends form complete receivers of flowers. The style and the build of these erections must depend a good deal on their situations, and the places adjoining: several of the sketches are given to show how they may be viewed. There is a method, too, of heating them, somewhat different to that which we have mentioned. For instance, a gutter may be made under the floor, if it is wished to conceal the pipes, or the gutter may be made waterproof and covered with iron plates, and this could be used as a tank, and the water flow round the house in them, instead of in pipes. But we know of nothing better than pipes, and should always use them in preference.

To go from the consideration of these to other buildings. We have to mention that as the top lights constitute the principal expense in pits and frames, stoves, and propagating houses, they may be had for fetching at less than a shilling per foot glazed complete and primed. Who would be without plenty of glass? The stove is important. It should, in a small establishment, be made to answer for any thing of the stove kind, though many people are so prejudiced against this general treatment of all plants. These may be contrived in the same building, placed in the different degrees of heat that may be formed, or rather made, in the same house. There can be always found appropriate places for different things; and it is worth while to keep also different degrees of dampness by artificial means. In the stove or hothouse, Mr. Penns' system for circulating the air is the most advisable plan for heating the house. This plan consists of giving off the heated air at the lowest portion of the house, that it may spread up the roof, and, as it falls, returning under the floor or false bottom to the place where the fires continue to heat it as it passes from time to time, by which means a rapid uninterrupted circulation is kept up, and greatly contributes to the health of the plants. The section of a hothouse upon this plan would be something like *Fig. 5.*

On a large scale, this would be a most effective plan, for there is nothing more simple, and when one of the pits constructed on this plan is closed, the circulation of air is remarkably strong: holes are left, through which air may be admitted at pleasure; but it is not often required. The brick-work in the stove is more expensive than in a greenhouse or conservatory, and the false bottom under which the cooled air passes from the back to the front, rather increases the labour; but in houses in which the tan pits are built, they would form an obstacle to the free circulation of air, if it were not for a grating at the back to let it down under the floor as it cools, and another grating under the pipes to let the cooled air come up again between them to be warmed again. The wood-work and glazing of a stove is no more than that of a greenhouse, and the build is much the same, except that the house should be deeper from back to front. The operation of the boiler and pipes is very simple, and may be understood from the following diagram (*Fig.* 6), for, turn and twist the pipes as you may, all that is required, is, that one end goes out at the top of the boiler, and the other end returns in at the bottom of the boiler. Thus the boiler is like two inverted flower-pots, one less than the other, and the water is between the inner one which holds the fire, and the outer one which is exposed. The fuel is put in at top and shut down. The flue is provided for in the fixing. This boiler would feed hundreds of feet of pipe, and it is perhaps the simplest and best of the many plans for heating horticultural buildings; due regard being had to the capacity and the economy of the thing, for both are objects worthy of attention. It is easily managed, for when the fire is lighted well, the aperture may be filled to the top and covered over, the regulator of the flue being so far closed as to allow of slow steady combustion. If a tank for hot water is preferred to tan in the interior pit, the tank may be made about eight inches deep, or from that to ten, the top must be closed with large slates, cemented together, leaving only one aperture to open at pleasure; this may be heated by sending the usual iron pipes through the tank; on the top of this tank may be placed a foot of tan or soil, or any other medium in which to plunge pots, or plant whatever is to be grown. The top of one (*Fig.* 7), is open to show the pipes, the

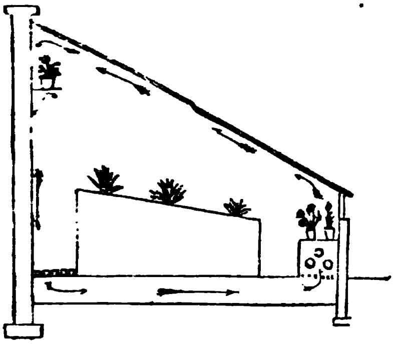


Fig. 5.

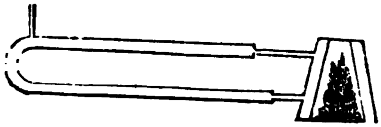


Fig. 6.

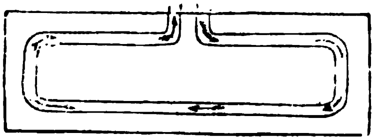


Fig. 7.

other (*Fig.* 8), closed, to show the slates; but the water in the tank may come direct from the boiler, in which case the circulation takes place in the boiler; a partition, such as is shown (*Fig.* 9), facilitates the circulation greatly, though it would act without any partition, but the circulation would not be so direct or so complete. The adoption of a tank for bottom heat does not render the usual ones a bit less necessary for the regulation of the atmosphere of the house.

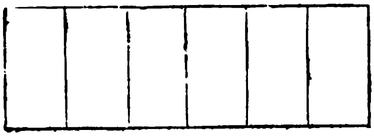


Fig. 8.

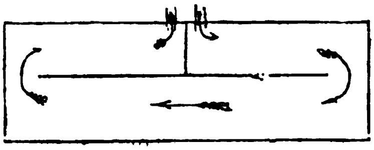


Fig. 9.

In the management of these pipes, there is a choice of allowing the pipes to go through the tank and heating the tank water by those means, or the water may be fairly discharged into the tank from the pipes, and after circulating in the tank, going out again through the returning pipes: in this case, the tank would be thus:—(*Fig.* 10.) Although only one pipe is represented, it can be doubled and trebled without affecting the main plan, and the saving of tan in the pit will be a considerable object, especially in localities that require it to be drawn any distance, for the cartage is frequently a good deal more costly than the material itself.

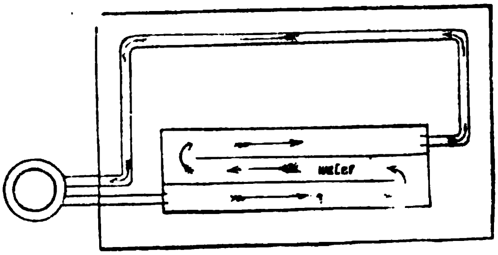


Fig. 10.

We should always set our faces against any of the complicated systems for heating houses. The more all operations can be simplified the better, and changes are always bad, if the plan in operation answers the purpose at all well. The construction of ordinary plant preservers, admits of great variety, because there may be every degree of heat and coolness; from the brick-built pit that is without any means of heating, to the necessary heat for stove plants, and there is scarcely any description of erection upon which there is so much money wasted; and this expenditure is often the result of collusion between interested persons. Builders too often induce those who can influence masters to have very useless things built, and it has been greatly encouraged by the garden newspapers, recommending one ridiculous contrivance after another, much to the disadvantage of the gardeners who have the management of the concerns, and who no sooner get used to the things they have, than they are called upon to adopt something else no better—perhaps no worse, but nevertheless not a little expensive. A range of pits three feet high at the back, and fifteen or eighteen inches high in front, six feet from back to front—the glass and wood-work of such a pit would be little expense, for the glass ought to be small, and the whole might be comprised in a shilling a foot, or three pounds every ten feet of length: ranges of pits of this description (*Fig.* 11), will preserve heaths and hard-wooded plants, with good covering, against frost, without any artificial heat, and they are the most useful of all the subsidiary buildings in a garden.

Fig. 11.

If it be desirable, or necessary to preserve the surplus of stove plants, a single row of iron pipe, back and front, heated from any boiler, will answer the purpose; and if to preserve orchideous plants, the only additional precaution required, will be to provide the moist atmosphere; but a pit of this kind, without much moisture, will be excellent as a resting place for those not intended to grow for a while. Camellias do well in such pits, without any fire heat, and only require to be closed and covered during the hardest frosts. Several ranges of such pits adapted to the plants they are to hold, may be erected in an appropriate place in front of each other; as, however, some require only cucumbers, and cannot obtain stable dung, one of the pits should be heated upon the tank system, like that already proposed for heating the centre pit of a stove: the construction in this case must be the same, and it will be well to carry out the plan of the hollow or false bottom for the circulation of air, for that will always be found an acquisition where it can be done conveniently. It is only necessary to obtain additional height for the room taken up by the depth of the tank; many, however, prefer for pits, dung heat; in this case, the wall of the pit must be perforated with holes, or rather must be built with holes, leading to a hollow chamber, over which the bed is formed, and outside the wall must be a second wall, and a trench between them (*Fig.* 12), or there are others who have archways leading to the chamber, and thrust the dung into it, raking it out and putting a hot supply whenever the other gets too cold, so as to allow the heat of the bed to decline too much; many, however, will do more with a common hot bed and garden frame, than others can do with all the expensive contrivances of modern buildings, and this may be called the most unpretending and useful of all garden constructions. We believe we have gone through all the absolutely necessary buildings for a garden, for one or other of these may be used for peach, cherry, or fig houses, forcing house, or by whatever other name they may be called. The stove is fit for a pinery. The same contrivance in lower pits will do for succession plants. The form of the greenhouse, with appropriate means of heating, will do for grapes, and if we make any other particular alteration, it would be in favour of orchideous plants, but even here, we should deviate but little from the ordinary stove, except by making shelves and places whereon to hang the various contrivances to hold the plants, for when they are in flower, the conservatory should be their place, and when not in flower, there need be no great pains taken to render the house commodious for visitors, unless, indeed, there be what may be called a show orchideous house, in which case the paths may be wider, and an open tank of water, not to be heated, except by the natural warmth of the place. This house, however, might be made a sort of stove conservatory, and if so, there may be any fanciful flower adopted that may suit the taste of the owner. We, however, do not profess to find a hundred plans for structures, on which no two persons' tastes would be indulged alike, and therefore leave this part of the subject for others, for each one will give a different opinion, and furnish a different design.

As a protection for plants on walls, without heat, one of the most simple plans is to use the lights of a common pit placed in a sloping position (*Fig.* 13), and for a great preservation against the falling frosts, a coping should be always built on the wall. The lights may be placed close together, side by side, to extend the range as far as may be desirable, and the ends may be closed with mats. As a protection for climbing plants that are a little tender, it is very efficacious, for the coping prevents the heavy rains from trickling down the wall; and there is nothing more fatal to half-hardy plants that are nailed against a wall, than wet in winter. The upper portion of the glass rests under the coping, so that no wet can get behind it. We have seen it recommended to place the entire frame against the wall, and the lights put on the frames. Of course, in such case, the small front of the frame is placed upwards. This is purely theoretical, no man could reduce it to practice without finding out that the wood work could not be put close to the wall, unless all the stems of the trees or plants are nobbed into the wood-work, nor would the wood-work of the back, which is to be next the ground, lay even unless the border were

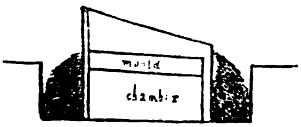


Fig. 12.

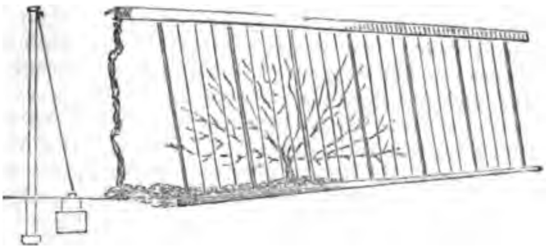
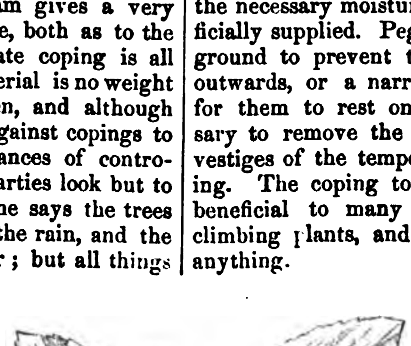


Fig. 13.

level (which is not so in one of twenty places), or as it were, propped to a level; again, the plan would be useless if the border had any other plants on it; again, wooden frames for lights are rarely more than six feet from back to front, so that all above six feet high would be exposed. The plan may do on paper, but not in practice. The lights of pits are, for the most part, from seven to nine feet long; and in all gardens there should be as much uniformity in the size of the lights as possible. All wooden frames for hot-beds should be five and a half to six feet long, and three and a half wide. All pits should be from seven and a half to nine feet, by four, to four and a half wide; but it saves immense trouble to have all the pit lights of the same dimensions; they are more handy to stow away, it matters not where they are used, and it is proper always to have a few spare ones. In using these lights against a wall, no matter whether one or a dozen be required, the ends have simply to be matted to keep out the cold; and whether there be six feet or sixty thus protected, there are but the two ends to mat. There are several considerations against using the wood framing; among these, the flat top being exposed, the rain will run in somewhere, for there is nothing to keep it out: in the next place, the glass is too far from the plants. The advantage of using the light only is that it can be placed nearly upright if necessary, or sloping out; and in very severe winters mats can be used all over them, and be easily kept in their places; not so if they project like a frame. If it be proposed to have framing on purpose, why, we might as well build a greenhouse at once. Our diagram gives a very good idea of what we propose, both as to the coping and the glass; a slate coping is all that need be put. This material is no weight for the wall, will easily fasten, and although much has been said for and against copings to walls, it is one of those instances of controversy in which one or both parties look but to one side of the question. One says the trees on a wall ought to have all the rain, and the coping is only good in winter; but all things under artificial treatment require to be managed consistently all through. We all know walls are a great protection to fruit-trees, as well as other plants; but they have their evils as well as their benefit, unless we counteract them. The trees on a wall require the nourishment of the rains from which they are shielded, because when the wind is blowing from the back, the rain never touches them; but if we, by artificial treatment, deprive a plant of any particular advantage, it is our business to supply it. Wall fruit-trees, under proper management, have the advantage of moisture over their foliage, when they want it only, and thus escape an excess of wet which those unprotected do not. This moisture is supplied by syringes, and not one gardener in two takes the trouble to give it them. Syringing is one of the most efficacious operations imaginable; nothing keeps a plant so clear of vermin; nothing disturbs the pests of the walls so much. The fineness or coarseness of the holes through which the water is forced determines the force with which it can be thrown against the trees. Before the buds open at all, it cannot be too strong, for the use of it then is to clean the stems, and wash out the dirt and vermin or eggs that may be behind them. When the growth is young and tender, it can hardly be too fine, for although driven with as much force as we can from the engine, there is no weight in such small particles to damage the young growth. Now the syringing under glass becomes still more necessary, so also does it under a coping, for as neither the rains sloping from the back, nor the downright rains can reach the plant, it would lose the necessary moisture altogether, if not artificially supplied. Pegs may be driven into the ground to prevent the light from slipping outwards, or a narrow board with a ledge for them to rest on, and when it is necessary to remove the lights, there will be no vestiges of the temporary protection remaining. The coping to the walls is found very beneficial to many half-hardy and tender climbing plants, and is never detrimental to anything.



THE KITCHEN GARDEN.

Sow artichokes, asparagus, basil, beans, beet, burnet, cabbages, carrot, cauliflower, celery, chervil, clary, coriander, leek, lettuce, marjoram, onions, parsley, peas, parsnips, rape, rhubarb, radishes, sage, savory, salsafy, salading, scorzonera, skirret, sorrel, spinach, tarragon, thyme, and turnips.

Plant and Transplant artichokes, balm, cabbages, cauliflower, horse-radish, herbs, garlic, liquorice, potatoes, shallots, sorrel, and tansy.

General Directions.—Finish shortly the principal digging and trenching; turn up the ridged and dug ground; wheel in frosty weather. Make a general preparation of the soil, for putting in the seeds, planting, &c.; stir the soil, when dry, between advancing crops. In unfavourable weather for out-door operations, prepare stakes, tallies, &c.; look over the onions, carrots, beet, and other stored roots.

Artichokes (Globe).—If not sown, do it immediately; and forward, by placing in heat.

Artichokes (Jerusalem).—Prepare ground for them by trenching and manuring well; a light soil is desirable: where a screen or blind is wanted in summer, they answer admirably.

Asparagus.—New plantations may be made; trench the ground three feet deep, and add fresh turfy loam, sand, and rotten dung, in quantity depending upon the nature of the soil; it must be made rich, and sea-weed, if at hand, is an excellent material; divide the ground into four-feet beds, with two-feet alleys between; put three rows into each bed; take up the plants with a fork carefully; lay them in trenches, which should be nine inches deep; keep the plants eight inches apart, and the crowns two inches below the surface. Prepare ground for seed sowing in an open space, by dunging and trenching it well; the seed must be sown next month.

Balm.—Divide the old roots, and plant at fifteen inches between the rows, and one foot in the row.

Basil.—Sow in a gentle heat, about the middle of the month, in sandy loam and leaf mould, equal parts.

Beans.—Make another planting towards the end of the month; earth up the advancing crops, a little high at the edge, so as to protect from keen winds.

Beet.—Sow a little about the end of the month, in rows sixteen inches apart; sow thick; and plant in a favourable situation, those kept for seed.

Brocoli.—Secure the early heads from frost, by cutting, and placing them in a cool room or cellar; cut them six inches below the flower, divest the stalk of its leaves, and insert it amongst damp sand.

Brussels Sprouts.—Stake the tall plants; pick only those sprouts which are firm and large, allowing the others time to improve.

Burnet.—Sow in rows fourteen inches apart, or divide the old roots; a few plants will suffice; any common soil will suit it.

Cabbages.—Plant a full crop of those which were pricked out; put them rather thick, as they can be thinned early, and used as coleworts. Sow again at the end of the month, and red cabbage also, if not sown in autumn.

Carrots.—Sow in a slight hot-bed early; and late in the month, sow also a few on a warm border. Protect, in severe weather, those in frames, and give air plentifully.

Cauliflower.—Near the end of the month, plant out at two feet apart, on a rich and warm spot, a few of the strongest, which have been kept through the winter, and protect them with spruce branches. In mild weather take off the lights from those in frames; shift a few of those in pots, and do not allow them to get dry and stunted: sow a few for succession under glass.

Celery.—Sow a little at the end of the month, in the stove or hot-bed; it is likely to run to seed, but it will be useful in the kitchen. When any sort proves good, preserve a few plants for seed, and plant them against a wall, or in a warm situation; keep earthing up the late crops when dry and mild.

Chervil.—Sow in any spare corner; a few plants will be sufficient.

Clary.—Sow at the end of the month, on a light but rich soil.

Coriander.—Unless there is a demand for it, a very few plants will suffice; raise them in heat.

Endive.—Look over those being preserved in pits or frames; clear away all appearance of damp; give air at back and front; and when required for use, remove the plant wholly.

Fennel.—Transplant to any spare corner; a plant or two will be plenty.

Herbs, as mint, pennyroyal, hyssop, &c. should be increased by division or slips, as required; they will all do in ordinary soil.

Horse-radish.—Plant fresh beds at once; put cuttings of the roots at the bottom of a trench at least so deep as to give one foot of clear root when grown.

Leeks.—Preserve and plant some of the good heads, where they will ripen their seed: sow a few at the end of the month.

Lettuce.—Look over those in frames; keep them a little dry, and stir up the soil amongst them, also among those against the walls, and in hand lights: prick out the young plants sown last month.

Liquorice may be grown from seed; but it is usually and properly increased by division of the roots. Plant eighteen inches apart, and three inches in the row, in deeply trenched soil.

Marjoram.—Sow any time this month in a warm border; afterwards plant in rows a foot apart.

Onions.—Prepare for the main crops; the ground should have been trenched, well manured, and ridged; now have it levelled, and if a quantity of leaf-mould, and a little pigeons' dung or guano, were worked in the surface, they will come up more sure and even. Stir the soil amongst the autumn sown crops, and clean thoroughly.

Parsley.—Sow, if not done; it is suitable for an edging; give it a rich, rather dry, and stony soil, and one of the best situations in the garden.

Parsnip.—Break up the ground well, and sow in rows at eighteen inches apart, at the end of the month.

Peas.—Transplant those raised in heat to the wall borders about the end of the month; also earth and stake them. Sow again on a warm border, say three feet apart; it is well to tally the whole, naming the sorts, and when sown, &c.

Potatoes.—Plant the general crops; if done in autumn, it is all the better. The early sorts which should be started in heat, and a little confined in the roots, may be planted alongside the south wall, and slightly protected; manure them principally with leaf-mould.

Rape.—Sow in any common soil about the end of the month.

Radishes.—Sow early, for succession, in a very sheltered place, or what is better, in a frame where they will have a gentle heat, and plenty of air: sow twice this month.

Sage.—Divide and transplant the old roots; or sow in a bed, and plant out at a foot apart.

Savory.—Sow at the end of the month, on a warm border, rather thick, in good soil.

Savoys.—Sow a few at the end of the month, in light and rich soil.

Salading, as mustard, cress, must be sown every fortnight upon a warm sheltered spot; forward it by placing handlights over it; it will be well still to have a little in heat.

Salsify and *Scorzonera.*—The ground for these crops should be well wrought, and in an open situation; sow next month.

Skirret.—Sow at the end of the month, in rows a foot apart, or increase by the roots.

Shallots.—Plant in shallow drills, giving the bulb a gentle press into the soil, and no direct covering; put them six inches apart, and fifteen inches between the rows.

Sorrel.—Increase by division, and put in rows fifteen inches apart, and nine between plants. Dress the old plantations if required.

Spinach.—Make small sowings at the beginning and end of the month; thin, clean, and stir between the autumn sown crops.

Tansy is mostly grown in a spare corner; it luxuriates in a rich soil, and is easily increased by division, or seed.

Tarragon.—Plant in rows fifteen inches apart, and six inches in the row; it is increased by division, and can be grown on common soil.

Thyme.—A small sowing may be made on a warm sandy border, or (if wanted early,) in a slight heat; it is easily increased by slips or layers in March; the old roots require to be often transplanted.

Turnips are apt to run to seed if sown early, and exposed to frost; therefore sow a few in a very gentle heat, under glass, and give air freely.

THE FRUIT GARDEN.

General Directions.—Keep the hoe active in dry weather. Finish all pruning, nailing, and planting; fork up the soil where it has been trampled down during the operations of nailing and pruning. Have all the protecting materials in readiness. Prepare for grafting, and preserve grafts of the approved sorts by thrusting them half way into the ground in a shaded place; or they will keep well in a cellar by being thrust into a potato, or among sand. Attend to airing the fruit-room, and wiping and cleaning the fruit.

Almonds—if fruit is expected—will require to be protected when in blossom; they are often and deservedly kept for ornament only.

Apples.—Finish the pruning and nailing by the end of the month; stake and mulch trees lately transplanted, and water them if dry weather prevails.

Apricots should now be finished, and as the blossom buds are observed to swell, it is a good time to disblossom, taking away all the weakest and badly placed; protect before the blossoms open; a net doubled and hung before the trees is of service in keeping the blossom later, as well as in preserving it; keep the flowers and wall quite dry; a coping board, to project ten inches or so, is of the utmost service at this season.

Cherries.—Have the early blossoms protected, and thin them where very thick.

Currants.—Finish early the making of plantations, and all pruning. Thin (not cut back) the branches of black currant bushes.

Filberts.—Hoe; and remove any suckers which may be shewing themselves.

Figs.—Remove a portion of the covering, if the weather permits, at the end of the month.

Gooseberries.—Mulch those which have been transplanted, with such material as rotten leaves; have all thoroughly hoed, but do not apply the rake except there be rubbish to remove.

Grafting.—Get the grafting clay and other appliances in readiness for this operation, which must be done while the buds are dormant.

Nectarines.—Have these pruned and nailed early: protect by awning or netting, and in very severe weather apply heat by the wall flues.

Peaches.—Prune and nail up immediately; thin the blossoms, taking off all that which is weak and badly placed: protect them, and if the coping is not broad enough a temporary board may be put up for a month or so, the better to resist cold.

Pears.—Plant, prune, and nail; keep the standards thin and open in the heart; take away all the spare weak blossom and wood; protect the blossom in severe weather.

Plums.—Complete pruning and nailing; a slight protection when in blossom is necessary.

Raspberries.—Those canes which were left long in the autumn pruning, should now be cut close to the stakes; dig and manure finally for the season.

Vines.—Can still be planted out; finish the pruning and nailing as early as possible.

THE FORCING GARDEN.

General Directions.—Although more air will be required than in January, yet equal care is requisite to avoid currents, and sudden transitions: effect this by opening and shutting the ventilators gradually, and place gauze or canvass over these openings, particularly at the front sashes, to soften, by breaking, the rush of air. Always, if possible, use soft or rain water, and have it when applied of the same temperature as the house. If dull weather should predominate, give a little fire heat during the day, and air at the same time: make the most of the influence of sun heat, by shutting up early in the afternoon without reference to the hour of the day. Keep a steady heat a little before, and after, and also while the plants are in blossom. Maintain a congenial atmosphere, by keeping every part watered, excepting when in bloom: avoid steaming; choose rather to follow nature, closer. Economize the fuel, and the energies of the plants at the same time, by covering at night with mats, as far as practicable.

Asparagus.—Temperature, 60 degrees by day; 50 degrees by night. Admit air more freely, by tilting the sashes at the back; renew the linings. Prepare another succession bed, the last for the season: the exhausted roots are worthless.

Cherries.—Temperature 50 to 60 degrees by day; 45 degrees by night. Take advantage of sun heat, and close early: use fire heat during the day, in dull weather; give a good syringing after the fruit is set; disbud early and gradually.

Cucumbers.—Temperature 75 to 80 degrees by day; 60 to 65 degrees by night. Syringe, gently, those in stoves, at least twice a day, occasionally using soot, and liquid manure in a clear state: go over them every day, and stop and impregnate as required: earth up as the rootlets protrude through the soil, using equal parts turfy loam and leaf mould of the same temperature as that the plants are in. Pot off the successional sowings when the seed leaves are half an inch broad; put one or two plants in a six-inch pot, planting them rather deep, and plunging the pots to the rim in a sweet heat. When dung beds are used, have the dung well sweetened by often turning before it is finally put up; allow the frame to remain close for a day or two, when first put on the bed to get up the heat, and after allowing the rank steam to pass off, form a hillock near the back of the frame of the same kind of soil as that used for potting; when this is heated to about 75 degrees, plant out one plant to a light, which should have been stopped previously; keep it about ten inches from the glass. When trained on a trellis, which is every way superior, allow the vine to run to six or seven joints before being stopped. Sow a few more seeds to meet emergencies.

Figs.—Temperature 65 degrees by day; 55 degrees by night. Disbud moderately; supply liberally with tepid liquid manure; syringe often but mildly, and maintain a moist atmosphere; place those in pots upon a stage or pit, where their roots may be allowed to run beyond the pots.

Kidney Beans.—Temperature 65 degrees by day; 55 degrees by night. Sow once a week, or according to demand; syringe freely with liquid manure: the early plants may be put in the early vinery, or pine stove, and placed quite near the glass; the younger plants will do best in such situations as the peach-house, and should be brought on in succession.

Melons.—Temperature 80 degrees by day; 65 by night. Give air every day, if possible, by tilting up the upper end of the sashes; this is preferable to putting down the sashes, as it prevents the draught of air being admitted at the bottom: water sparingly. Those in stoves or vineries must be syringed in the mornings regularly, or if a moist atmosphere can be maintained, so as to keep down insects, less syringing will do. Sow a few of the Persian sorts; plant them in heavy loam, well pressed together. The Ispahan should not be stopped until it has rambled to the extent of the frame.

Mushrooms.—Temperature from 55 degrees to 60 degrees; make up a succession bed with well prepared manure; introduce the spawn, in small pieces, six inches apart, when the heat is spent to that of new milk: when the heat is declining, covering the beds with hay will renew it, and render watering the beds, with warm water, unnecessary.

Musas.—Temperature 70 degrees by day; 60 degrees by night. Increase the amount of moisture in the air, and of water at the roots, using it in a tepid state: about once a week apply liquid manure.

Nectarines.—Temperature 70 degrees by day; 55 degrees by night. Keep the house a little dry when the trees are in blossom; shake them to disperse the pollen, using a camel-hair pencil to impregnate the sorts which are difficult to set; fumigate at the first appearance of green fly, and shut up with a good degree of sun heat.

Oranges.—Temperature 50 to 55 degrees by day; 45 by night. Give additional, yet moderate waterings: have the plants perfectly clean, and shift a few of those which most require it, using a strong loamy soil mixed with rotten manure.

Peaches.—Temperature 60 to 70 degrees by day; 55 by night; disblossom as well as disbud; withhold water when in flower; and have the blossoms impregnated; give a good syringing when the fruit is set; thin the fruit when of the size of peas. Fumigate, to destroy green fly, and it may require to be repeated; the house should be dry when fumigated, as the smoke is apt to do injury when the plants are in a wet state. Cover the border outside with litter; stir and rake the soil within to sweeten and enrich the whole. Maintain a steady heat; shut up early, permitting the thermometer to rise five degrees by sun heat, after closing.

Pine-Apples.—Temperature 75 degrees by day; 65 degrees by night. In dull weather keep the fires going, and admit air every day; let the bottom heat range from 90 to 100 degrees; apply a little liquid manure at the roots, giving it very weak at first, and increasing both the strength and quantity, as the season and the plants advance, until the fruit ceases swelling, when it must be gradually withheld.

Rhubarb.—Temperature from 60 to 65 degrees. Force now in the open ground by placing fermenting material around the boxes or pots, with which the plants may be covered.

Salading (as mustard and cress).—Temperature from 60 to 70 degrees: sow still, a little in boxes or pans, in rotten tan, keeping it near the glass: it requires no water.

Seakale.—If fermenting material is scarce take up a few roots with good crowns, and put them amongst soil in the mushroom-house. Give additional covering with leaves or litter to the plants out of doors, which will soon be ready for use; it is unimportant that the crowns be covered with pots, but they must be marked with stakes, and care is requisite in the uncovering.

Strawberries.—Temperature from 55 to 60 degrees by day; 50 degrees by night. As soon as the fruit is set, increase the heat and give copious waterings of liquid manure; tie out the fruit stalks to short stakes; maintain a moist atmosphere up to the time of ripening. Bring in another succession of plants; start them in a cool house, and bring them on gradually.

Vinery.—Temperature from 70 to 80 degrees by day; 65 to 70 degrees by night. Be careful in admitting air, and let it be only at the top ventilators; nail on canvas at the openings, to break the rush of air; give and take away the air by degrees, shutting up with sun heat at 85 degrees, when at command. Thin the buds, bunches, and shoots, allowing about fifteen bunches to an established vine, when trained to a single light, but this must be regulated by the state of the plant, and the space it covers. The borders outside must be thickly covered with stable litter, and those inside watered with the liquid manure. Gently shake the bunches when in flower, and withhold water. Put in cuttings of single eyes, and plunge the pots in heat; supply those in pots with liquid manure liberally.

THE FLOWER GARDEN AND SHRUBBERY.

Sow a succession of all hardy and half-hardy annuals, towards the end of the month.

Plant and Transplant plants of every kind, if the weather is dry; the sooner the better.

General Directions.—Complete all alterations by the end of the month. It is quite proper, where expense is no object, to have the beds in the flower garden laid down in a new form almost every year. Where new lawn is being made, it is the readiest way, and the best, if turf can be got good, to turf it, instead of sowing. Roll and sweep the lawns and walks; also turn the walks, if necessary. These should have a gentle rise in the centre, and at the sides should be filled up to within an inch or so of the level of the verge. Finish pruning and digging, and nearly the whole of the transplanting; for although this may be done next month, it is well for many reasons to have it completed as early as possible. Keep the hoe going now in every part; and as the season advances, let the whole garden increase in neatness and beauty.

Layering.—All hard-wooded shrubs which are difficult to raise by cuttings, can be got by layers, thus:—bend down the branches to the earth, pin down with pegs, and, usually at a bud, say a few inches from the extremity of the shoots, make an incision, cutting upwards half an inch; many tough wooded plants do better twisted; cover the cut, or twisted part with soil, and make the shoots stand a little erect: some kinds will be two seasons in rooting: use some sandy soil for rooting in. The present and next month are suitable for the operation.

Transplanting Trees and Shrubs, may be done now, though this season is not so good as the autumn. Avoid making deep pits for the plants; rather trench the spot, and, at least with all choice kinds, plant on or near the surface, providing soil to cover the roots; those which have bad roots especially must be supported.

Alpines.—Keep these on a northern aspect; a few might now be planted out upon the rock-work, or any suitable romantic spot.

Anemones.—Loosen the soil about them; the reserved tubers must be put in immediately.

Annuals.—The hardy kinds forwarded in frames, should be potted in six-inch pots, four or five plants in each; give them plenty of air, excepting when fresh potted, when they are kept close for a day or two; use a soil of loam, leaf mould, and sand. The half-hardy ones, as rhodanthe, mesembryanthemum, schizanthus, &c., may be sown, giving them a little bottom heat, and plenty of light, when they vegetate.

Aquilegias (Columbine).—Plant out single plants where they are to bloom, in a rich soil.

Alyssum saxatile.—Those in pots and in the reserve garden should be planted out now where they are to flower.

Auriculas.—Divide and plant out the border sorts; re-surface the prize kinds with a rich compost of pigeons' and cow-dung well decomposed, adding a quantity of river sand; give air by tilting behind; protect from frost.

Box-edgings.—Finish the making and repairing of edgings, as early as possible; it will do later, but hinders other work in the busy season.

Bulbs.—All those planted early will be the better for being slightly protected in severe weather; and those which are yet to plant, must be put in immediately.

Carnations must be kept well aired and free from damp, than which nothing is more injurious: turn and clean the soil, which is laid up for their final shifting, and expose it to the frosts.

Campanulas (*Canterbury bells,* &c.)—Plant in the situations where they are to bloom, if not already done; place them singly, not in masses; a soil of loam and rotten dung suits them.

Clematis and Deciduous Climbers.—Prune, and tie in a few of the strong and best ripened shoots.

Crocus.—Before the different plantings come into bloom, stir up the soil afresh.

Daisies.—Divide and plant for edgings, keeping each kind by itself; they look well on banks in masses, but must be well watered, and have a rich loamy soil.

Dahlias.—At the end of the month, place the choice sorts in heat, putting them in a light soil, or lay them in boxes, or together on the ground, and sprinkle dry earth over them; look over the old roots, and attempt to save any that may be rotting, by putting them in heat, to produce cuttings.

Gentianella.—This makes pretty edgings; divide them now for that purpose: they also look well in large patches; sprinkle a little fresh soil below and around them, removing some of that which is exhausted.

Hyacinths.—If frosty, protect with dry litter, or mats; but avoid covering them when mild: the finer sorts should have an awning.

Jasmines, Honeysuckles, &c., when struck from cuttings or layers should be put in nursery rows upon a reserve border.

Laurels, Laurustinus, &c., may now be propagated freely from cuttings, putting them in thickly in shallow trenches, a foot apart; put a little sand and leaf mould at the bottom. To have plants quickly, select a few of the under branches where they will not be missed, peg them down, and throw a spadeful of soil over them; they will very soon be rooted.

Mignonette.—Keep that in pots, well aired, and near the glass; have the caterpillars carefully picked off, if they appear. Sow a little on a warm border.

Mimulus, (Musk plant, &c.)—Plant out those which have been kept in pots for the winter; and divide the old roots, giving them a rich loamy soil.

Pansies.—Still keep the fine sorts in frames, but give air freely; propagate from the small suckers issuing from the old plants: prepare new beds for them, with a compost of loam, leaf mould, and rotten manure.

Picotees.—Prepare the soil thoroughly for the final shifting, by turning it in frosty weather, and picking out all the insects; water the plants sparingly, and air plentifully.

Pinuses.—Be careful *now to protect* the choice specimens planted out, with mats or awning, as the young growth is apt to be injured by frosts.

Pinks.—Form and plant new beds, using a soil of equal parts loam, leaf mould, and decomposed cow-dung; make up the deficiencies in the old beds, or plant the old plants into the borders.

Polyanthus, Cowslips, &c.—The seed which is sown must not get dry; sprinkle a little moss over it: those in pots must have plenty of air, and the pots must be plunged, and kept near the glass; the commoner sorts look well as edgings.

Primroses are also suitable edgings; the fine double sorts must be kept in frames, and kept from cutting winds and cold.

Ranunculus.—Plant immediately, if not done; protect the early planted ones from heavy rains and severe cold.

Roses.—Where the soil is exhausted renew it by taking part of the old away and replacing it with strong loam and cow-dung. Finally, prune a portion of the trees, but allow some to stand over until next month to make a succession of bloom.

Saxifraga umbrosa (London Pride) is an excellent thing for an edging in shady situations, as under trees; divide and plant them four inches apart.

Stocks.—Pot off those sown last month, and the richer the soil the better; avoid peat earth; put in another sowing; those in frames may be put out under hoops and mats, which will gradually harden them, and make room for more tender plants.

Sweet William.—Plant out in masses; nothing looks richer; if possible, keep the colours distinct; any ordinary soil will suit them.

Sweet Peas may, at the end of the month, be sown on narrow strips of turf (inverted) hollowed out sufficiently to admit of covering the seed, or they may be sown in pots or boxes; they must be kept in frames, and if they can have a little heat at first, all the better.

Tigridias.—These should be placed in pots or boxes, and started in a gentle heat about the end of the month.

Tulips.—Have an awning ready to apply in frosty weather, and to protect them from heavy rains.

Violets.—Where these are growing by the side of walls or as edgings, they should be cleaned carefully, which will considerably improve their blooming; in very cold weather protect them if flowers are wanted.

WINDOW GARDENING.

General Directions.—As most of the plants now in flower must be obtained from the forcing house, they must not be exposed to the cold air for some days. Those which are being brought on gradually to flower, must be often syringed and sponged, doing it in the forenoon; or during a mild shower, they may be set out to clean the foliage, which invariably gets dusty. In watering invariably use tepid water.

Bulbs will be much assisted by being placed in stands, and surrounded with moss; this too improves their appearance.

Begonias.—Those started last month, will be beginning to grow, and the supply of water may be increased. Pot the others in a fresh and rich soil, well-drained, but give no water until they start.

Cacti will require no water; keep them in the warmest part of the room, where there is light.

Calceolarias should have a larger pot, and rich peaty soil; they must be kept near the light, and have plenty of air; they are very liable to injury from green fly, which should be looked to.

Camellias should now be in full bloom; they require a little more water, but avoid deluging them; excite them to grow when the flowering is past.

Cinerarias.—Give plenty of air, and keep cool; if the pots are full of roots, give them a size larger, using any rich soil; they are very liable to suffer from green fly.

Cyclamens may be kept in bloom for months. C. persicum is odoriferous and easily cultivated; keep them a little close, and water rather sparingly.

Evergreens, which are most suitable for balconies at this season, should have all the fading leaves cleared off, and the surface of the soil freshened up.

Geraniums should be kept near the light; they may be set out on fine days, but must be taken in again in the afternoon.

Hyacinths.—Those in glasses may have a small piece of charcoal put in the water, which keeps it fresh, and prevents the necessity of often changing it; let the water used always be rain water: when frosty weather prevails, remove the glasses to a warmer part of the room: a little guano water is beneficial when they are in full growth, but apply it clear and weak.

Myrtles must not have much water; the old soil should be taken away from the roots, and fresh added; or, if necessary, they may be potted, using rich loamy soil, well drained.

Oranges.—Keep these somewhat warm and close; when commencing to grow, surface the pot or tub with a mixture of strong yellow loam and decomposed cow-dung.

Roses.—Pick off all the decayed flowers, and shorten the flower shoots very moderately. By the end of the month, shift them, using rich loamy soil.

Primula sinensis.—Divest these of all their old flower stems, and preserve no seed but from the very best sorts; stir up the soil in the pot, and water sparingly; propagate the double flowered ones by dividing them, and planting the slips as cuttings.

Wardian Cases.—The chief element of success in growing plants in these, consists in making a suitable selection, and introducing them at the proper season; next to this, stand arrangement, and thorough cleanliness. The plants most suitable are such as various annuals, cacti, ferns, lycopodiums, and orchids, in general avoiding very free and rapid growing kinds. The best mode of arrangement is, to have in the centre a rustic branch reaching to the top of the case, and fixed at the bottom; to this branch (or tree in miniature) the orchids may be attached. The surface may, throughout, have an irregular rocky character, and here ferns and lycopodiums may be planted. The arrangement of the plants may often be changed, so as to give variety. Thunbergias are found to do admirably in these cases: sow a few now in a hot-bed for that purpose. Cacalias, mesembryanthemums, cacti, and similar plants do pretty well in small pots, amongst soil containing lime rubbish well drained. Lycopodiums and ferns, which are perhaps the best suited of any, may be increased by taking off young plants, and checking them by growing them in small pots with little soil; they then do not get large; the dwarf sorts are best; the rare and beautiful kinds should have the most conspicuous places. *Lygodium scandens* does well, and should be allowed to ramble amongst the orchids. Orchids should consist of the small growers; they must be attached to very small blocks, by small wire, with a little moss about their roots. The sensitive plant which does well, and has much interest, should now be sown in a hot-bed, preparatory to being placed in the case.

PITS AND FRAMES.

Alpines.—Give these more water and air: the most interesting and pretty, as *Saxifraga oppositifolia* with the primulas, may be taken to the green-house while in flower; continue covering at night if the weather is cold; the pots may now be taken out of the material in which they are plunged.

Annuals.—The tender sorts may be sown in heat any time this month: pot off into small pots those which were sown last month, plunge them in bottom heat, and keep them near the glass: cover close at night with mats. Half-hardy ones may also be sown now, in heat—say the middle of the month: shift those which have been kept through the winter, and keep them neatly staked, giving air slightly every day by tilting the sashes behind.

Half-hardy Plants which have been kept for bedding out, as verbenas, fuchsias, pelargoniums, &c., may, if in cutting pots, be shifted singly into small pots, and those now in the small pots, may be shifted to the next size, keeping the frames close after, for a day or so. The choicer sorts should be propagated from as much as to secure a sufficient stock, putting them in silver sand, and giving them a little bottom heat.

Violets in frames, must have plenty of air and light, and moderate supplies of water.

Hardy Perennials, as pentstemons, campanulas, &c., kept in frames, should be planted out near the end of the month; cuttings of all these may be put in now, and will produce plants to flower in autumn.

Forcing Pit.—Continue to keep this filled up, as the plants are successionally taken away for the show-house. The various bulbs, as amaryllids, hyacinths, narcissus, iris, oxalis, sparaxis, anemones, gladiolus, &c., may all be made serviceable now: it is an advantage to have the pots well filled with roots previous to their being put in the heat. Protect the bulbs plunged out of doors from the rains and frost, and let them be excited gradually when wanted. The other forcing plants will chiefly consist of lilacs, deutzias, azaleas, rhododendrons, kalmias, &c.; also, lily of the valley, geraniums, pinks, carnations, roses, &c. &c., most of which would be all the better for slight bottom heat. Keep a moist atmosphere; syringe with tobacco water, or fumigate at the first sight of aphis or green fly. The heat of the house or pit may range from 50 to 60 degrees at night, and from 60 to 75 by day, closing up early with sun heat. The whole of the plants will be bettered by applying weak liquid manure when growing.

THE GREENHOUSE.

Temperature.—From 40 to 50 degrees by day, and 35 to 40 degrees by night.

Ventilation.—In mild weather give air plentifully; no artificial heat will be required to dry up damp, unless it be very dull weather; continue to use artificial coverings at night in cold weather, and only when very severe apply fire heat.

Watering.—A little more moisture will now be requisite: look over the individual plants every day; and in watering give as much as will go to the bottom of the pot, otherwise the plants will be liable to suffer when not expected. The water must be of the same temperature as the house.

Potting.—If any of the pots have before been in use, have them all washed and thoroughly dried. Begin to shift those plants which are vigorous growers, and in the most forward state: drain well, and cover the drainage by a little moss or turf to prevent the soil mixing with the crocks: when the roots are matted, they must be carefully loosened, and the ball of earth pierced to admit water. The utmost care is requisite to have the soil filled into every crevice around the ball, which should be set so deep in the pot as will admit of being just covered in shifting.

Soils.—If possible have all the different kinds protected from the rains. Turn composts in frosty weather: that most generally useful is a mixture of turfy loam, leaf mould, and peat earth in equal parts, with a little decomposed cow-dung and silver sand added; this will suit all soft-wooded plants, as pelargoniums, fuchsias, salvias, &c. Epacris, heaths, and the hard-wooded things generally require a soil composed chiefly of sandy peat in a turfy state, adding in the case of azaleas, and such plants, a little leaf mould.

Top dressing.—Those plants which from want of accommodation and other causes may not be shifted, must have all the old soil taken away as far as the roots will allow, and replaced by fresh soil of a somewhat richer nature than the plant usually requires when shifted, but of the same character.

Insects.—Fumigate, or syringe with tobacco water, at the first appearance of green fly. To prevent spotting or dirtying the plants with the tobacco liquid, syringe them first with clean water.

Aloes, and succulents generally, will require but little water; on the appearance of growth give rather more.

Agaves, and large succulents, may be shifted at the end of the month, and excited into growth; they require a rich soil and a perfect drainage. Sponge over the leaves, which are apt to get dusty: give them plenty of air.

Alströmerias.—Give these a little tepid water as they advance, and when mild admit plenty of air to them, but avoid currents.

Amaryllis.—Pot a few more for succession: many of them require stove treatment, and all are the better for a little warmth: those potted early must have additional water; and those in flower should be kept cooler.

Annuals.—Sow a few in pots such as schizanthus, viscaria, phlox, lobelia, and other showy kinds, giving them a slight bottom heat: transplant them into small pots as soon as they are fairly grown; keep them near the glass, where they may get plenty of air in mild weather.

Azaleas.—Take a few more into heat for succession, and keep the remainder as backward as possible, by placing them in a cold shady situation. Those past bloom should be shifted and taken into the stove or vinery, where they will be excited into growth, and matured for early forcing: they should have peat soil, with a little leaf mould when shifted.

Calceolarias.—If large specimens are wanted, give them a shift as often as the roots touch the sides of the pots: prevent damage from slugs and green fly, from both of which they are liable to suffer. Keep the plants near the glass, and air regularly to prevent them drawing. Use a good deal of turfy peat when potting, and water moderately.

Camellias.—Those plants which are past bloom should be shifted, (giving them a soil of loam and peat, equal parts,) and put into a warm place, such as the pit in a vinery. Shift only those which require it, as many do well to be shifted only once in two or three seasons.

Cape Bulbs, as ixias, gladiolus, &c., if required early, may be forwarded by being placed in a gentle heat; the general stock will do best in a cold frame protected from frosts, or in a greenhouse on shelves near the glass.

Cephalotus follicularis (New Holland Pitcher plant).—Increase the heat and moisture as the days lengthen; and plant a few pieces of lycopodium around the edge of the pot, which must be kept growing and clipped.

Cinerarias.—Keep always cool, and give plenty of pot room to the larger specimens: those wanted to flower early should be confined to small pots, and watered with liquid manure when forming their flower buds; use tepid water.

Chrysanthemums.—Place these in an open and cool place, just free from frost, giving them a little water.

Crassulas, and allied plants, should be kept at the warm end of the greenhouse: give them a small shift into a soil of peat loam and leaf mould, equal parts, adding a little silver sand. The heads of the young plants will be much improved by thinning out the weak shoots.

Cyclamens.—The seedlings should be grown freely in the coolest part of the stove: the old plants may be kept in the warmest part of the greenhouse, and must be regularly watered.

Epacris.—Those whose bloom is past should be well shortened back, and when again started to grow, shifted into larger pots in a soil of sandy peat and a little leaf mould; they will require very little water. Keep the late sorts very cool, to prolong the flowering.

Fuchsias.—Shift the early started ones into a good sized pot, using equal parts of loam, leaf mould, and decomposed manure, with a little sand: thin out the irregular and over crowded shoots, and where the branches are scanty, stop the young shoots; train mostly with one leading stem. Cuttings will now strike readily in a little bottom heat; do not top the cuttings.

Gompholobiums, and other tender creepers, must be kept regularly tied in; it is not advisable to tie too early, as the young shoots get deformed; allow them to ramble a little and thin the weak shoots.

Haworthias.—Keep these rather dry; stir up the soil and renew the surface: a thin layer of white sand on the surface looks neat.

Leschenaultias.—Put these where they will have plenty of light, and no confined damp, such as on one of the high shelves: tie down the shoots so as to form handsome bushes.

Lilium japonicum.—Keep still in a cool frame; air freely, but free them from any cold winds. Water must be increased as they advance in growth.

Mignonette.—Set the pots in a light and dry part of the house, and water carefully. If successional plants are scarce, the same end may be attained by stopping a few of the plants.

New Holland Plants, as acacia, hovea, &c., should successionally be brought into bloom by aid of a little extra heat: give them more water and stop any strong rank shoots, so as to balance the plants: shift those past flowering, using a soil of peat and loam, with sand.

Oranges.—Shift those requiring it into a soil of strong loam: thin out the shoots of those lately cut back; and the shabby looking plants should now be cut in, and put where they will get a little at the roots, as well as the branches.

Oxalis.—Keep these at the warm end, and in a moist atmosphere; the late ones may be kept in a cool frame.

Pelargoniums.—Persevere in covering up at night, if the weather is cold. Shift those wanted to bloom in June and July without delay; the soil must be one half loam, the remainder equal parts of decomposed cow-dung, leaf mould, and silver sand; continue airing regularly. Those for blooming early should remain unshifted, and must be kept well watered, using a little liquid manure occasionally. The young plants kept in store pots must now be potted singly; they should be stopped, and then allow their leading shoots to grow, which when at the third joint must be stopped again; these will make fine plants to bloom in autumn.

Primulas.—Give larger supplies of water; save the seed of the improved sorts, and keep all free of dead leaves, and such of the seed pods as are not wanted.

Proteas, Banksias, and *Dryandras,* must have plenty of air, and rather more water. When potted, which should be done with care, give them free loam with a little sandy peat.

Rhododendrons.—Remove those in bloom to the conservatory; those which are past, put in a house where they will get a little heat to cause them to grow, and ripen their buds early; bring on the others gradually. Plants from the open ground may be lifted for forcing.

Roses.—Those for early bloom must have a little heat; fumigate at the first appearance of green fly.

Salvias.—Keep those cool which will be wanted for late blooming: the young plants must be kept growing, and shifted into rich soil.

Stapelias.—Allow these to remain unwatered except in dry weather, when they should have a little.

Tropæolums.—Look over these every day, and give a proper direction to the young shoots, so as to have the trellis equally covered all over: they must be freely but carefully watered.

THE CONSERVATORY.

Temperature.—From 50 to 60 degrees by day, and 45 degrees at night; 5 degrees over or under will not materially affect the plants.

Ventilation.—Admit air chiefly at the top, and more freely, but avoid currents; if admitted at the front, let it not be by opening the sashes directly opposite those open at the top.

Watering.—Keep all the plants near the pipes or flues, (and indeed where there is any heat,) well supplied, as they are liable to suffer from drought. The plants will generally require additional water; but it must be of the same temperature as the house. Those which are planted out, may have a second watering, about the middle of the month. Examine the soil six inches down, and ascertain its real state.

Arrangement.—Continue to re-arrange the plants once a week; remove the flowering plants as they get shabby to their respective departments to be shifted, and put into heat to make wood and buds for the following season.

Insects.—Those plants which are planted out, must, when infested, be syringed with tobacco liquor a good deal reduced, taking care first to have the plant syringed with pure water. Those in pots, as roses, cinerarias, &c., should be put into a close pit and fumigated. The scale and mealy bug must be got rid of if possible; syringing with very warm water will generally kill the latter, and brushing with soot and soap water will remove the former.

Soils.—Those plants which grew strongly last year, may have exhausted the soil; it will be well therefore that those which are vigorous growers should be looked at, and the exhausted soil removed, and replaced by some of better quality, according to the nature of the plant.

Routine.—Remove all decayed leaves and the fading blooms, and sweep out every morning, taking care to damp the floor first, to prevent dust arising.

THE PLANT STOVE.

Temperature.—From 60 to 70 degrees by day; and from 55 to 60 degrees by night.

Ventilation.—Admit air increasingly, but still with caution; shut up early, and allow the temperature to rise to 75 degrees with sun heat.

Water.—The amount of water may also be slightly increased, yet it must be given very moderately to plants recently shifted; give slight syringings in the morning if the weather is bright, and maintain a moist atmosphere.

Potting.—Look over the whole carefully; and re-pot those whose pots are well filled with roots, also those which have imperfect drainage and sour unhealthy soil; keep them close for a few days after shifting. All soft-wooded plants, as clerdendrons, salvias, &c., require a richer soil and larger shifts than such as ixoras, and the hard-wooded plants.

Soils.—It is a common practice to have all soils mixed up and exposed to the influence of frosts, &c.; but if the soil is under cover, it is immaterial whether or not it is previously mixed.

Insects.—If possible check them at their first appearance, and prevent their increase as much as possible by sponging over with clean water the foliage of those plants which are dusty.

Achimenes.—Put a few of the store pots, (which will be full of tubers) into heat, and pot the young plants when grown about an inch long; put them into various sized pots, pans, or baskets; for large specimens plant eight or ten tubers in a patch, somewhat near together in the centre of the pot; water sparingly at first.

Allamanda, Beaumontia, and the strong growing creepers, should, if necessary, be shifted into a soil of equal parts peat and loam, adding a little sand and leaf mould; those which are to be trained on a trellis, should have them immediately applied.

Alpinias, Hedychiums, and other reedy plants now in a growing state, will require to be shifted; give them a little bottom heat, and as they advance in growth, increase the supply of water.

Aphelandras, Justicias, Ruellias, &c.—Many of these being now past bloom, can be cut partially back, and increased by cuttings; those kept for later flowering may be shifted into larger pots, or they can be improved by applying a little weak liquid manure twice a week. Pot off the cuttings put in last month, and when the roots touch the sides of the pots, top them to make them bushy plants.

Begonias.—Towards the end of the month, the full stock of the tuberous rooted sorts may be shaken out and repotted in a light but rich soil, and placed where they will have a gentle bottom heat. A few of the herbaceous and shrubby sorts may be excited, but others must remain for a while in a state of rest, receiving very little water.

Burchellias.—Put a few of those which have been kept cool, into heat, and keep them moist

Cacti.—Excite these gradually and in succession. Shift those which require it, but they will bloom more freely if rather stinted: at the same time, to have good specimens they must be shifted and put in a rich soil. Where grafts have been put on, keep the moss around them in a damp state, until they are united.

Cinnamomum (Cinnamon tree).—The healthy plants with pots full of roots may be shifted into larger pots, and may have a little bottom heat, and be kept close for a few days: if not healthy, re-pot them into the same size or a smaller pot, using a turfy open compost of equal parts peat and loam, and also give them a little bottom heat.

Clerodendrons.—Cut down the old stems to three or four eyes; shake away the old soil, and pot them anew in fresh and rich soil. Seedlings from autumn sown seed, should be potted off. They must all have plenty of heat, light, and room, and a moist atmosphere.

Climbers.—These must be well cleaned, pruned, and neatly tied in; the young shoots are not the better for being tied in too early.

Daturas.—Excite a few of the rested plants, and propagate from the single eyes; or pot cuttings of two or three eyes each, singly, in four-inch pots; if placed in heat they will soon root, and may then be shifted on.

Erythrina.—Thin out the shoots of those started early to three or four; the thinnings make excellent cuttings, when a few inches long; bring more plants into heat, and train some with a single stem.

Euphorbias.—Remove those in flower to the cool end of the house, where they will retain their bloom much longer. Propagate young plants of *E. fulgens*, and keep them dwarf and bushy, by stopping them in due time.

Ferns may now be looked over and many will require shifting: use a soil of loam and leaf mould, with a little peat and sand; they require a humid close atmosphere. Sow the seeds (spores) under a bell glass, scattering them over rough lumps of peat soil, and set the pots in feeders of water; they will require no other watering nor covering. The water fern (*Ellebocarpus oleraceus*) must be kept very moist: it is best raised from seeds annually.

Gardenias.—Put a few into a pit where there is a good bottom heat; they must not have much water, and the atmosphere must be kept moist and congenial.

Gesneras, *Gloxinias*, &c.—Those started early must have a shift, shaking away all the exhausted soil; place a few more in heat: those in a resting state must not be allowed to suffer from cold or damp.

Hippeastrums, Crinums, and Pancratiums.—Those showing signs of growth should be re-potted in fresh soil, and put in a warm and light place: allow those which are resting to get a little dry gradually.

Hydrangeas.—Supply largely with water, also liquid manure twice a week; bring in a few more plants for succession.

Ipomœas.—Sow the seeds in a hot bed, to be potted off early: give the established plants a slight pruning.

Ixoras.—Plunge in a dung or bark bed near the glass. When the pot is nigh filled with roots, shift them, using a soil of three parts peat, and one of loam, with a little silver sand.

Jasmines, *Rondeletias*, *Brunfelsias*, &c., in a flowering state, should have good supplies of water: thin and tie out the shoots of those wanted for specimens.

Lantanas will require very little water: those beginning to grow will furnish cuttings for propagation, and these will make fine plants; or they are useful for bedding out for flowering in autumn, and may be treated precisely as verbenas, only they require peat, or bog mould.

Luculia gratissima.—Those struck last month should be potted as early as possible into a soil of loam, leaf mould, and sandy peat: continue to propagate young plants if required.

Lycopodium.—Give these plenty of moisture; put the finer sorts in a light situation. It is a good plan to prevent their suffering from accumulated damp, to plant them in a pot inverted within another, the inverted one being filled previously with soil and potsherds, and the hole at the bottom so enlarged, as to leave room to insert the plant; in this case, a few plants may also be inserted around the edge of the outside pot: this plan may be adopted to produce a large mass in a short time.

Malvaceous plants.—Sow more seeds of the annual kinds of hibiscus; pot off those sown last month. The shrubby sorts must be dressed, potted, and plunged in the hot-bed; others may do without plunging.

Manettias and other tender climbers must be carefully watered; shift them into fresh soil as they show signs of growth, and provide trellis and stakes of sufficient size.

Melastomas.—The late shifted ones must be kept growing, and moderately watered at first: the others may be shifted at the end of the month.

Melo-Cacti must still be kept moderately dry: those most forward, may be shifted towards the end of the month into a soil of sandy loam, brick rubbish, and a little leaf mould.

Nepenthes (Pitcher plants.)—These may

now be kept more moist, the pots may stand in water. Plant lycopodiums around the pot, they give the plant a more lively appearance.

Neriums must still be kept very cool; the green-house will suit them; but when wanted to grow, they must be put in heat, and have plenty of water as they advance in growth.

Nymphæas (Water-lilies) and other large aquatics delight in a rich loamy soil, and should now be shifted: increase the heat, and fill up the tanks, applying tepid water; keep them clean, and the pot in which they grow always covered with water.

Palms.—Increase the temperature and moisture; syringe frequently, taking care to apply the water as gently as a fine shower, and of the same temperature as the house.

Polianthes (Tuberose).—Keep in a gentle bottom heat, giving no water until they show signs of growth.

Thunbergias.—Pot off those sown last month; and when they commence to run, have them staked; shift the old plants, and have the trellises or stakes put to them early; sow a few more seeds this month; these require a moist atmosphere.

Vincas.—The old plants should have fresh soil composed of peat and leaf mould, adding a little loam and sand; give them a little bottom heat, and when in vigorous growth, top the shoots to produce a uniform head.

THE ORCHID HOUSE.

Temperature.—The warm or Indian house from 60 to 70 degrees by day; 55 to 60 degrees at night. The cool or Mexican house from 5 to 10 degrees lower. In dull weather, the lowest temperature should be adopted, and when sunny, the highest.

Ventilation.—The sashes need not be opened except in very sunny weather, and then a little in the forenoon: cover up at night with mats, and should the weather prove stormy, the sides of the house may be kept covered until April.

Watering.—Those which are to be shifted must be allowed to get rather dry; indeed little or no water at the roots will be required; increase the moisture as the light and heat advance, and syringe occasionally.

Insects.—It is always necessary to take means to destroy these, and the most effectual means should be resorted to on their first appearance: if possible, check them instantly, and it will greatly facilitate this to go round with a candle at night, so as to observe their movements; they are particularly injurious to the young growing shoots at this season of the year.

Potting.—Those which are showing signs of growth, may be shifted. It is usual when using the common pots, to half fill them with drainage, and also to mix with the material used as soil, pieces of broken brick or charcoal. Those on blocks, and in baskets, must also be shifted by placing them on and in others of larger dimensions.

Form of Baskets.—The best is that of an irregular round outline, *made of any crooked and knotty wood, as the oak,* though both the square and the inverted cone forms, as well as the wire baskets, may be sometimes employed. The former are as yet little known, and less in use, but they have a more natural appearance, and are so much the more beautiful. It is necessary, whatever material be used, to see that it is quite clean, and the practice of charring the blocks and boiling the knotty chats before using, is commendable in this light. The bamboo cane is excellent for making baskets, for its durability; and cork and willow blocks are recommended. In certain situations, perhaps a large rustic branch might be introduced; and those which delight on blocks, as the phalænopsis, might be conveniently placed upon it.

Plants in Flower.—Although these plants will retain their bloom much longer in a cool atmosphere, they must not be allowed to remain any longer than is compatible with the future welfare of the plant: after the bloom is past, they must be dressed, and again returned to their place of growth, taking care to place them in a coolish situation at first, and inure them again by degrees.

MISCELLANEOUS NOTES.

Weeds.—No weeds should be suffered to grow either on the cultivated ground, the walks, or the spare corners of the garden, nor yet in the soil along with potted plants; they should be hoed or pulled up, as the case may be, as soon as they appear. Above all, they should never be suffered to perfect and shed their seeds. The roots of perennial weeds should be thoroughly extracted, for in most instances, every little scrap left will grow, and thus the evil would become aggravated by imperfectly removing them. Always remember, that where weeds appear among cultivated plants, they are robbing them; if they grow on the walks, their appearance is untidy: if they are allowed to flourish in spare, out-of-the-way corners, they are likely thence to become disseminated over the whole garden.

The genuineness of seeds is a matter of great importance to all garden cultivators: spurious seeds are neither so productive as genuine ones of good kinds, nor can the regular seasons of the crops be so well depended on. It is always most profitable to grow *the best* varieties of every kind of vegetable fruit or flower, and to pay a fair price for good articles, which are generally to be had of respectable dealers.

CONIFERÆ.—The Pinus, or Pine Tree.

Pinus, *Linnæus* (the Pine).—The derivation of this name is doubtful; probably from the Greek root *pion*, signifying fatty matter, the trees furnishing the pitch, tar, &c., of commerce; or, as Dr. Theis thinks, from the Celtic *pin* or *pen*, a mountain or rock, whence the little Apennines, the Pennine Alps, &c. The Gallic *pinwidden* means a mountain tree, and this may certainly be considered as a good basis for the generic name.

* *Leaves in pairs.*

a. Scales of cones truncate at apex or blunt at summit.

Pinus sylvestris, Linnæus (wood Pine, or Scotch Fir).—This species has two leaves in each sheath, but in the young plant the leaves come out singly. When full grown, they are from two to three inches in length, of a light bluish-green colour, concave or hollow in the centre of the upper side, and of course the reverse on the under. The buds are about half an inch long, bluntly pointed, of a brown-red colour, but, in some instances, whitened with resin. Flowers erect, the males aggregate, sulphur coloured, and soon surmounted by a branch: females solitary, of a purple and green colour. Cones, when full grown, from two to three inches in length, of a deep green, but when exposed to frost they become white. The seeds are brown and dark-coloured. A native of the elevated northern districts of Scotland, where it attains an age of 500 years, or more.

As this Pine forms the most valuable tree to mankind throughout Britain, it demands a longer notice and description than the others. The species enjoys a wide geographical range, growing almost everywhere, being found in abundance throughout Europe, Asia, and America, crowning the heights, and filling the valleys, in every description of clime, losing and retaining its vigorous appearance, according to the situation which it may happen to affect, yet admirably bearing out its character of being a true denizen of the world. But though thus widely scattered over the face of the earth, its proper seat is on the mountains vast and rude. This is certainly nature's distribution of the species, and though it may grow on the hot savannahs of India, it is as much out of its element in such situations, as the osier is when placed on the bleak hill-top. In warm countries, where the temperature rises above a certain degree, the compound of the juices becomes deranged, and the oil which pervades its bark, flies off in the shape of vapour. All such timber, therefore, is deficient in hardness and durability; a fact which may be tested even in this country by any one who has plantations on two sides of a hill, the timber on the southern exposure being rather softer than that produced on the northern side.

Properly speaking, this pine has no communion whatever with other trees having broad leaves. In a state of nature, it is found alone, delighting in light sandy places, with dry shattery bottoms, or even in a substratum of rock. Viewed in such a situation, the tree is a tall, towering object, not soon dying down, and affording the best of timber.

The varieties of this tree are very numerous, but few of them are worth much notice except *P. sylvestris horizontalis*, or the red-wooded Highland Pine of Scotland, which is infinitely more valuable than the species itself. It is at once distinguished from the common tree by its smooth and red bark; by its suddenly diverging into innumerable thick branches like the Cedar of Lebanon; and in old age somewhat resembling the bold and rigid figure of the oak. The safest criterion, however, by which we can judge of the variety is by the cones. "By their fruit ye shall know them." The appearance and length of the spicula leading to a distinction, is deceitful, and ought to be looked upon with considerable caution. The cones of the true Highland Pine are much smaller and rounder than those of the common tree, having, when compared with the others, an appearance of *stuntedness*, as if the tree which bore them had been in *ill health* all the summer. The trees of the variety do not bear *one-fourth* of the quantity of cones found on the species; and hence it is that nurserymen go on propagating that kind which they can the more readily procure. There is every reason to believe that the red-wooded tree is the original and true Scotch Pine, but as the other one bears seed in such quantities it has been, in most cases, resorted to, because, as already observed, the cones can be had at a much cheaper rate.

It would be difficult to say too much in recommending the hard-wooded tree in preference to the common soft-wooded variety, which, compared with the other, is but a worthless castaway. It will be readily admitted that in the ordinary branches of husbandry, it is of great importance to lay down even an annual crop with seed of a pure variety and kind, which has not become in any respect degenerate. Of how much greater consequence is it, therefore, to exercise every care in securing the genuineness of a crop destined for the growth of fifty, or perhaps a hundred years. In the northern parts of Scotland, the timber of the Highland Pine, when situated near shipping places, is frequently sold in large quantities at from 1*s.* 6*d.* to 1*s.* 8*d.*, whilst that of the common variety fetches at most from 6*d.* to 10*d.* a cubic-foot—the best of all proofs of the preference it commands in that quarter, and its great superiority over the other as a timber tree.

Keeping the better variety in view, therefore, the properties and uses of the species are exceedingly numerous. The timber shipped at the ports of Riga, Dantzic, Memel, and Petersburg, are chiefly of the Scotch Pine. The longest and best masts received from those ports are of the same tree. An immense majority of the deals and joists used in house carpentry, are also of this description of wood; and it would be difficult indeed to select any piece of work, where wood is required, where this species of timber is not to be found. It is used as posts and rails for fencing, in the manufacture of agricultural implements, in raising out-buildings, for ladders, scaffolding, doors, windows, tables, and chairs. Without it, rural and domestic comforts and conveniences would have been a century behind the almost perfect state in which we find them in the present day. For fuel, the wood of this tree is eminently suited. In this respect it has been, and is, a great ameliorator of the cold and wintry north, shedding a happy gleam around the fire-side of many a mountaineer. It is also used extensively in its living state, to abate the severity of the climate, experienced in elevated districts throughout Britain, either by planting it alone in the shape of a hedge or fence, or by placing it in belts or strips. Its resinous products must not be forgotten. These are turpentine, tar, and pitch. The roots of this tree, after being thoroughly dried, are split up into thin pieces resembling laths, which are used by the Highlanders of Scotland instead of candles. They afford a tolerable light, but require almost constant attention.

Many writers on trees have set down this pine as a sombre, uninteresting object, devoid of all merit as an ornamental plant, and fit only for the recesses of the forest. Unluckily, a great many of those who have published treatises on trees have been sadly deficient in the *imaginative*, and have had, in reality, no eye for anything akin to the picturesque. The truth is, several of them have risen from that class who have been accustomed all their lives, hatchet in hand, to cut up *brushwood*, as it is called, which is nothing more or less than the pine,—that pine which has been noticed in undying strains by Virgil, Ovid, Horace, Statius, Catullus, and all the masters of antiquity,—so that by force of habit our modern men of taste have been led to associate it with all that is mean and common. We forgive them. Viewed on its native hills, there is an air of grandeur and antiquity, a solemn and solitary beauty about this species of pine, that renders it, perhaps, the most picturesque of any of the cone-bearing tribe. In spring-time, it is true, it does not appear in the gay drapery of the birch, or in the soft apparel of the poplar, but as a grand and striking object, it has its worshippers, dingy and funereal though it be called. To have a right estimate of its character, however, it must be seen holding converse with the storm on the solitary heights of Braemar, Abernethy, and Cairngorm—the Lebanons of our island—where it has grown in an unbroken line of succession since the days of the flood.

The Scotch pine is always raised from seeds. The cones which contain them are gathered about Christmas time, after the frost has operated upon them so as to change their colour to a greyish white, when they are said to be ripe; for if collected when green, they will not open without being subjected to a degree of heat which would destroy the vegetative power of the seeds. The safest way of treating the cones is to expose them to the heat of the sun; but where large quantities are required this plan is tedious in the extreme. Those who collect cones in order to supply others with seeds, invariably place the cones upon a kiln, and subject them to a gentle fire, turning over the cones several times in a day, until they have all expanded. A great proportion of the seeds will fall out, and what remain in the cones may be separated from them by sifting with a wide sieve. They should then be spread about six inches deep upon an uneven clay floor, and rubbed with the feet until the wings are detached. After this they should be subjected to the usual cleaning process, as is done with other seeds, and kept in a dry loft till required. The time for sowing the seeds is the middle of April; and in order to insure a full, close crop, a free sandy loam should be selected on which to sow them. Many crops of this tree are entirely ruined by being sown in soil which gets crusted or baked by sunshine, because the tender sprouts cannot penetrate through the surface usually formed on retentive ground. The depth of covering required for these seeds is about quarter of an inch; but on particularly light land it may be safely increased to half an inch. In the seed-beds, the plants should remain eighteen months, when they should be transplanted (in the month of October) into nursery lines nine inches apart from each other, and the plants in the lines about two inches apart. Nurserymen, it is true, place the plants much closer than is here recommended, but when so treated, they are often found deficient in those side branches which are both useful and ornamental, and which give that *stockiness* so requisite to plants when placed in exposed situations. They may remain in the lines either one or two years, but it will be always found advisable to plant them out where they are intended to remain the year after they have been removed in the nursery, the roots being then a thick mass of fine fibres.

The mode of planting this pine will depend entirely upon circumstances. For this tree, it is quite impracticable, as it is unnecessary, to attempt trenching or ploughing up large tracts of waste land, as some arboricultural writers have recommended. In all cases, where the heath does not exceed five or six inches, the plants may be at once inserted with a miniature spade, or *planting* iron, as it is called, placing the plants at about four feet apart from each other. Rank furze, broom, &c., must be uprooted; and in cases where the heath is tall, it should be burned a few years previous to planting. If the peat soil on the surface of the land is more than four inches thick, the plants will succeed but indifferently. It is, therefore, advisable that a labourer, with a mattock, should precede the planter, skimming off the peat with one end; and bringing up the subsoil with the other. The best time to plant the Scotch pine is in the month of September, because then the young trees furnish themselves with roots in their new situation before the winter comes on. This fact admits of no dispute.

The after management of a pine wood is one of the nicest operations which the forester has to think of. On the one hand, you have the delicately organized structure, beautifully furnished on all sides with branches and leaves, which are the life agents of the tree. On the other hand, you know that the timber-merchant cares not for branches, and that he must have a clear, clean, trunk. The plan, therefore, is to plant the trees so close to one another that their proximity will discourage and prevent any strong lateral branches, whilst the removal of the weak ones can have no hurtful effect upon the timber. Yet, again, air and light must be admitted to the boles, else the wood will be soft and spongy. Such are the considerations to which the attention of every enlightened planter should be directed.

The age at which the Scotch pine should be felled will be best determined by the nature of the soil on which it grows. If exceedingly poor, and retentive of water, the trees will attain their largest size in twenty-five years. This species of soil, which is indicated by a very thin crust of peat on a layer of red sand, or iron stone, and bearing only sickly patches of heath, with here and there pools of water, will not bear wood profitably of a greater age than stated above. On good land, such as valleys and slopes of hills, where the roots have free access to the subsoil, the tree will attain maturity in fifty years. On very exposed situations, again, such as the tops of mountains, and what are called barren tracts, freely exposed on all hands, and which are the proper seats for this pine, the tree is reckoned to require about seventy years of age to mature its timber. It is impossible, however, to lay down rules which will reach every situation and climate, and much must be left to the discernment of those who may have the charge of forests. Girting the stems will, of course, show at any time how the trees are progressing; and when a small increase only takes place, the question comes to be considered whether that addition to the bulk of the stem is sufficient to warrant the occupation of the land to the exclusion of young trees which would grow much more vigorously.

The particular season of the year at which pine trees should be felled for timber is during those months when the sap is at rest, that is, from October till March. Summer felling, which is practised only in those countries where the snow lies deep for five or six months, deteriorates the wood to a certain extent by enclosing in the stems a large quantity of sap, and though this sap has its channels in the outer part of the bole, the inner, or heart-wood, is also excited during the season of growth, and cannot then be in its fittest state for felling.

Varieties.—These are very numerous, and have been long known to those at all interested in the growth of pine timber. Many planters have considered that the great differences in their appearance, and in the quality of the wood produced, arise from the nature of the soil and climate in which they may happen to be situated; but these reasons are quite insufficient to meet the facts of the case. The Earl of Haddington, writing in 1760, says, "Though I have heard it asserted, that there is but one kind of Scots fir, and what difference is seen in the wood when wrought is only owing to the age of the tree, and the soil where it grew, yet I am convinced it is otherwise; for this reason: when I cut firs that were too near the house, there were people alive here who remembered when my father bought the seed. It was all sown together in the seed-bed, removed to a nursery, and afterwards planted out the same day. These trees I cut down, and saw some of them very white and spongy, others of them red and hard, though standing within a few yards of one another. This makes me gather my cones from the trees that have the reddest wood, as I have said before." Boutcher, who wrote some years after, confirms this statement; and in Lawson's Museum, Edinburgh, are specimens of Scotch fir wood, of two distinct varieties, produced on the same soil. The fact is known to several planters in England. A few years since, Nathaniel Micklethwait, Esq., of Beeston Park, near Norwich, presented the writer of the present article with pieces of Scotch pine-timber, remarkably distinct from one another, one being white and soft, and the other quite hard, and so red that at a distance it was thought to have been painted of a reddish colour. The trees were of the same age, grew in the same climate, and in the same soil, being within two yards of each other.

P. s. horizontalis, Don of Forfar, Sang, Grigor, Lawson, and others. Leaves broader and of a lighter glaucous colour than those of the common tree. Branches more horizontal, often drooping and twisted. Bark, smooth, reddish. Timber red and hard. Cones small, few, with an appearance of being imperfectly formed. Seeds a third smaller than those of the common plant, resembling, in colour, those of the spruce fir. The red-wooded Pine of some authors, the Mountain Pine, the Highland Pine, the horizontal-branched wild Pine, and the Speyside Pine, of others.

A bold vigorous growing tree, with a shaggy head, the delight of painters, and valuable as producing timber equal to the best foreign deal. There are trees at Syon, under the name of P. rubra; at Mrs. Day's, Horsford Hall, Norfolk; and in many other parks in England.

P. s. haguenensis, Roth (Haguenau Pine).—So called from a village of that name on the Rhine, and near to which is an immense forest of this tree, covering about 30,000 acres. Leaves very long, twisted and finely serrated. Young plants more robust than those of the common tree. Bark smooth, scaly, not furrowed. There are fine tall trees of this variety in the woods of Robert Marsham, Esq., Stratton Strawless, Norfolk: and smaller trees at Loudon's Howe, and Loudon's Brae, in Perthshire. The latter places are named in honour of the late Mr. Loudon, who supplied the seeds from which the young trees growing at those places were raised. Mr. Marsham represents the wood as excellent.

P. s. uncinata, Don of Forfar.—Leaves serrulated, and cones hooked, or covered with prominent prickles, all regularly bent backwards, which are the chief features characteristic of this variety. Discovered by Mr. Grigor, of Elgin, in the extensive woods of Main and Bishopmill, near Elgin. The timber is of a yellowish colour, and rather better than that of *P. sylvestris vulgaris*.

P. s. rigensis, Desfontaines (Riga Pine).—Not known to the writer, but in all probability identical with some of the foregoing varieties. In Lawson's Manual it is observed that this plant "may at least be considered as possessed of equal merits with such as are derived from the best native forests in the Highlands of Scotland." Specimens of this tree may be seen at the Horticultural Society's Garden.

P. s. monophylla, Hodgins.—Leaves very long and glaucous. A variety raised by Mr. Hodgins, of Dunganstown, near Wicklow. It has not attracted general attention in England, and the only plant recorded is in the garden of the Horticultural Society, Chiswick.

P. s. intermedia, Horticultural Society.—Leaves long, green; branches slender, drooping. A rather distinct variety. A specimen stands in the Horticultural Society's Garden at Chiswick.

P. s. tortuosa, Don of Forfar.—Leaves short, twisted, resembling *P. austriaca,* and growing to the height of *P. sylvestris vulgaris.*

Other varieties might be mentioned, but when the plants are compared with the foregoing, the difference is hard indeed to be detected. Thus *P. genevensis* is the commonest kind of Scotch fir. *P. s. scariosa* has gone back to the original; and it is very doubtful if *P. s. altissima* is anything more than a vigorous growing plant of the same tree.

Pinus pumilio, Hænke (dwarf or Mountain Pine).—Leaves two, almost straight, short, thickly set on the branches, and deeply sheathed. Cones egg-shaped, without footstalks, truncate, or with blunt scales somewhat depressed, small, many of them bearing a striking resemblance to those of *P. sylvestris horizontalis,* or the red-wooded pine of the mountains of Scotland.

A curious ornamental plant, scarcely entitled to be considered as a tree, originally from the mountains of France and Germany, whence it was introduced into this country in 1780. The tree has a decumbent or trailing habit, which still distinguishes the original plant which stands at Orford Hall, near Warrington, in Lancashire. Of its wood no evidence is yet on record; but from its bushy habit, it may be judged that it will never, in this respect, take the place of other well known varieties, and that it will be retained in plantations merely as a botanical curiosity. The outline of this pine might be greatly improved by close planting; but it is constitutionally deficient in all those points necessary to form a good timber tree. It has been planted in several places in the north of Scotland; and the result is, that in the most exposed situations the plants are distinguished by a greater luxuriance of growth, and an intenser colour. This would indicate a favourable point in its character as adapted to high unsheltered places, and probably to the sea-side. The largest specimens in England are at White Knights, where they assume a tree-like form, chiefly on account of their having been drawn up amongst others.

Varieties.—P. p. Fischeri, Booth, Lawson.—A plant raised by Mr. Booth, of the Flottbeck nurseries, in 1826, from seeds received from Philadelphia; but by no means worthy of being separated from the species. Specimens are in the Hackney nursery, and in the arboretum of the Horticultural Society.

P. p. rubræflora.—Another nominal variety, having the flowers of a pinkish or red colour, the only respect in which it differs from the species. A specimen at Dropmore, is fifteen feet high, covering a space upwards of sixty feet in circumference.

Pinus Mugho, Du Hamel (Mugho Wild Pine). Leaves, two in a sheath, rigid and of a deep green. The male flowered catkins are nearly sessile. The ripe cones are rather larger than those of *P. sylvestris,* and their scales are swelled into well-defined protuberances. The young buds are of a light brown colour, beautifully candied over with resinous exudation, which has the appearance of having been dropped. The leaves are more thickly distributed over the branches than in the Scotch pine; yet it altogether bears such a close resemblance to that tree, that many botanists have considered it only as a variety. Few or perhaps none of our pine trees is supplied with resinous matter in such abundance, yet, from its dwarfish habit in very exposed situations, and on account of its comparatively small proportions, it is not likely to supersede others in the manufacture of tar, turpentine, &c. It is found indigenous in several districts of Germany, particularly on the Carinthian and Carniolan mountains, also on the Pyrenees. Its cones are ripe at the same time as those of the *P. sylvestris,* and the directions given for extracting and sowing the seeds of that tree apply in every respect to the present species. The tree appears to delight in a deep sandy loam, several plants in the writer's nursery ground having made shoots, during the last season, eighteen inches in length. Some care is necessary in order that the young plants should be all started with a good leading shoot, the habit of the tree predisposing it to throw out vigorous side branches. Its timber is represented as rather inferior to that of the *P. sylvestris.*

Varieties. — P. M. uncinata (hooked Mugho Pine).—A variety bearing a good deal of resemblance to the species. More compact in habit, and of quicker growth. A native of the Pyrenees and other European mountains, affecting a higher zone of vegetation than the Scotch pine, and producing timber of greater durability. Whether it will bear out this character away from its native mountains is very questionable. As to its hardiness there is little doubt, for at Rozelle, in Ayrshire, it has been tried extensively in valleys, slopes of hills, and on the tops of mountains, the last situation suiting it better than any other. "Those exposed to a good deal of storm," Mr. Locke observes, "are in reality greenest upon the stormy side, and are thriving well, while those planted in the low ground about the house are in a sickly state." The most unfavourable point relative to this tree is, that even where it thrives best it grows only at the rate of nine feet in twelve years. Nevertheless, as an alpine tree, it is well worth the attention of planters. There are specimens in the garden of the Horticultural Society.

P. M. nana, the Knee Pine of Upper Styria, where it affects the highest mountains in the form of a trailing bush. It is considered to be extremely hardy. A specimen in the Dublin Botanic Garden, twenty years planted, is about two feet high only.

Pinus resinosa, Aiton (red Pine).—A red barked tree, erect and tall. Leaves in pairs four to five inches long, almost straight, of a light glaucous green, tipped with yellow. Buds reddish brown, resinous, one inch and a half long, concave on the sides, with long fine points. Cones, two inches long, obtuse ovate-oblong, of a brownish red colour, and almost without footstalks. Scales of cones dilated in the centre, and spineless.

A noble tree bearing a general resemblance to *P. Laricio,* but altogether more open and airy in its growth, having the branches less intermixed, the foliage lighter, and the whole tree less robust. Viewed in its native country, the United States, the plant will bear the highest recommendation both as an ornamental object and as a timber tree. Its average altitude is seventy-five feet, with a bole six feet in circumference, retaining this girth to the height of about fifty feet. The bark is of a reddish colour, similar to that of *P. sylvestris horizontalis;* a feature indeed which forms at once a distinguishing characteristic of the species. The leaves are tufted like brushes, another marked character of the plant, and rendering it very desirable on the lawn and pleasure ground. The wood is close, of compact grain, full of resinous matter, and consequently very enduring. It makes good pumps, and it is often laid down on decks of ships forty to fifty feet long, without exhibiting a single knot. It is often used as masts for large ships, and considerable quantities of it are imported into England to be used for house-building purposes. Viewed in this country, it almost ceases to interest any one as a prospective addition to our timber trees; and it is now sharing the fate of the great majority of its kindred from America—being prized only as an ornamental object, but occupying the first rank in that respect. At Rozelle in Ayrshire, it has not succeeded, though planted under the most favourable circumstances. After seven years' trial, it was found not much larger than when removed from the nursery. Mr. Locke says, "we have been a good deal disappointed with this pine, after the high recommendations it had from America." At Bollindalloch, Morayshire, it gives better promise. At Dropmore, Berkshire, specimens of this tree are thirty feet high. There are good trees also at White Knights, Carclew in Cornwall, and at Chipstead in Kent. It ought to have a place in every Pinetum. Plants are 2*s.* 6*d.*

Pinus halepensis, Aiton (Aleppo Pine).—Leaves two and three in a sheath, but generally only two, from two inches to three inches long, slender, grass-like, remaining on for two years only, which accounts for the meagre appearance of the tree. Flowers appear in the beginning of June. The male catkins reddish, grouped on short pedicles; the females, green, tinged with red, proceeding from the side of the branches. Cones on thick footstalks, pyramidal, regular in form, with depressed truncated scales, fawn coloured, and when perfectly ripe, grey. A widely distributed species, a native of Syria, Barbary, Spain, and France.

A low grower, and only entitled to be considered as an ornamental plant in the climate of Britain. In this respect, however, it is really very desirable, and ought to be in the collection of every one who has an Arboretum. The winters in Scotland are too severe for it; and those plants which were tried in the Pinetum, at Rozelle, were killed a few years since. The fact that it thrives luxuriantly on slopes of hills near to the sea-side, at Runton, in Norfolk, may be of use to planters who have lands similarly situated. It has been planted in considerable numbers in that district; and the secret of its great success there, is, in all probability, to be found in the *deep-trenched* soil in which it grows, coupled with its proximity to the sea which wards off the intensity of frost. There is no pine which displays such an improvement when let loose from the restraint of pot culture, so that its appearance in nursery grounds would actually deter those from trying it who had never seen it luxuriating in deep free soil, where its roots are not confined. This plant might be rendered more fit to withstand the winters of the north if it were grafted on the Scotch pine. The seeds of this plant should be sown under glass, kept in a shady place out of doors till October, and protected during the winter in a greenhouse. When two years old, they might be planted into lines in the nursery, or placed singly in pots, and sunk in the open ground, sheltering them with dead branches, &c., during the winter months. Plants two feet high are 1*s.* 6*d.* each.

Varieties.—*P. h. minor.* A variation from the species only to the extent of the cones being smaller. A specimen in the Horticultural Society's Garden is from 25 to 30 feet high.

Some writers have given a variety under the title of *P. h. maritima*, a plant which will be favourably noticed under the head of *P. Pinaster minor*, to which it evidently belongs. *P. h. genuensis*, introduced by Captain Cook, is considered by Mr. Loudon to be identical with the species.

Pinus bruttia, Tenore (Calabrian Pine).—Leaves two, six to nine inches long, slender, pale green, wavy. Cones without footstalks, ovate, acute, very much crowded, with flattened scales. Buds ovate, without resin, half an inch long.

A spreading tree of the middle size, not unlike the Aleppo Pine, but much hardier, and said to produce timber of excellent quality. There are specimens at Kew, Dropmore, Hackney Arboretum, the Horticultural Society's Garden, and at Chatsworth. Young plants have been raised by Mr. Lambert at Boyton, and distributed amongst his friends and the public Horticultural establishments of the country: but as yet little evidence has been adduced in regard to its suitableness to the climate of Britain. In Naples its wood is excellent; and, at any rate, it is a most desirable species for ornament.

Pinus pyrenaica, La Peyrouse (Pyrenean Pine).—Leaves two, long, clustered at the ends of the shoots and somewhat twisted or gathered around them, strong, upright, and of a bright green. Cones pointing horizontally, on strong footstalks, almost as thick as those of *P. halepensis*, ovate shaped, with scales round and truncate or bluntly pointed.

The arboricultural world is indebted for this tree to Captain Cook, author of *Sketches in Spain*, a work peculiarly interesting to all those who have any love for the noble order of plants under consideration. It was introduced by him in 1834. He found it occupying the highest range of the extensive forests of the Sierra de Segura in the southern districts of Spain, where it overtops *P. halepensis*, but not alone, being mingled with other pine trees in woods almost inaccessible from their extreme elevation. According to this gentleman the tree "is quite hardy, of quick growth, and will, from its noble appearance, the beauty of its form, and the clear transparent colour of both the bark and foliage, be a vast acquisition to our park scenery. The timber is white and dry, being nearly without turpentine; but the cones exude a most delicious balsamic odour. The wood was formerly used by the Spanish government, in the arsenals of Carthagena and Cadiz, for the decks of ships; for which purpose regular depôts were kept in the Sierra de Segura; and it was floated down to the respective ports by the rivers Segura and Quadalquiver. It is one of the species described in the book of Arab agriculture written by a Moor of Seville in 1200, and translated by Banqueri.' There are plants at Elvaston Castle, Chatsworth, Ballindalloch in Morayshire, and at Rozelle in Ayrshire, in which last place it is considered "a very compact and desirable ornamental pine, rather slow in growth." One of the finest specimens in England is said to be in the Horticultural Society's Garden.

Pinus Banksiana, Lambert (Banks's, or Labrador Pine).—This was named in honour of Sir Joseph Banks, who sent the plant, or the seeds of it, to Mr. Lambert. Leaves two in a sheath, nearly 1½ inch in length. Sheath of leaves short and ringed. Cones curiously twisted and recurved like small horns, persistent, that is, remaining on the trees for many years. They are very abundant, producing seeds of the size of the spruce fir. Buds are about ½ inch long, dotted with resin in large particles. The plant has a great many synonymes, by some of which it may be the more readily known:—The Scrub Pine, the Grey Pine, (from the grey cones which it bears,) the Hudson's Bay Pine, and the *Pinus sylvestris divaricata*.

This pine, in many respects, is valuable; in others it is not so. It is to be prized for the singular, and in some instances, ornamental character which it assumes, and because it is so hardy that it may be introduced in almost every situation where the Scotch pine will thrive. The only exception to its hardiness, so far as the present writer knows, is to be found in an account of Coniferæ recently introduced by Archibald Hamilton, Esq., Rozelle, Ayrshire, whose gardener thinks "the *P. Banksiana* will not suit this climate, either as a timber tree or an ornamental object. With us," he observes, "it resembles a stunted shrub rather than a hardy timber tree." The *P. Banksiana* is a native of America. In Nova Scotia it is called the Scrub Pine; in Canada, the Grey Pine; and in Halifax, the long-limbed Hudson's Bay Pine. Among the rocks of Labrador it is frequently met with of a height under ten feet; and in some instances it assumes all the marks of old age and decrepitude when three feet high only. The handsomest tree in England is considered to be a specimen growing in the Pinetum at Dropmore; and there are others in the Horticultural Society's Garden at Chiswick, and in the Hackney Nursery. It is a rather singular fact that in Britain this tree grows with a rapidity and to a height not indicated by the species in its most favoured native habitats; but it is to be feared that for mechanical purposes its wood will be on that account of less value.. This pine is propagated by seeds sown in a mixture of peat and sand in the end of March, and covered to the depth of ½ inch. It may be also increased by grafting on the *Pinus sylvestris*, a process which is said to improve the character of the species. In the *Traité Pratique* of Delamarre, the operation is described as follows:—The species intended to be united should be as nearly allied as possible; for, though *P. Pinaster* and *P. Pinea* may be grafted on the *P. sylvestris*, and the cedar on the larch, yet it is preferable (because the grafts succeed better, and the trees produced are likely to last longer,) to graft species which are evergreens on evergreen stocks, and those with the leaves in bundles on stocks with the same number of leaves in a bundle. The operation of herbaceous grafting is performed in the cleft manner; the slit being made a little deeper than that part of the scion which is to be inserted in it. The time of performing the operation is when the leading shoot of the stock has attained the length of from eight to twelve inches, and will break over (without tearing the bark,) like a piece of glass, or the most succulent part of a shoot of asparagus fit to gather for the table. The time during which any given species has its leading shoot in a fit state for being broken over in this manner is not more than 15 days; and as the scions from the species to be grafted are equally tender with the stock, they will not remain longer in a state fit for the operation than about the same period. The graft should be inserted in the leading shoot, which should be broken with the hand so as to reduce it to the length of from four inches to six inches; the leaves are then removed from this remaining portion, with the exception of about an inch at the top, on which they are left for the purpose of drawing up the sap. The scion should be about two inches in length, the lower part of which should be deprived of its leaves and cut in the form of a thin wedge, the operator using a very sharp knife. The graft should then be tied with matting or woollen, and then covered with a cap of paper, in the form of a candle extinguisher, so as to exclude the sunshine. The covering must of course be tied to the stock. About a fortnight after, the ligature may be removed. The process here detailed will of course serve for all other species of pines, the seeds of which are difficult to procure.

Pinus Pallasiana, Lambert (Pallas's, or Tartarian Pine).—Leaves long, two in a sheath, nearly erect, channelled. Sheaths short with three rings. Cones somewhat curved, four to five inches in length. Bud one inch in length, somewhat in the shape of those of *P. Laricio*, but considerably larger. This plant has many synonymes, among which are the following:—*P. taurica*, *P. maritima*, *P. tatarica*, *P. halepensis*, *P. Laricio*.

A native of the Crimea, whence seeds of it were sent in 1790 to Messrs. Lee and Kennedy of the Hammersmith Nursery, who sent it out as *P. tatarica*. The wood of this tree is excellent; but it can only be had of a serviceable length by planting the young trees so close to each other as to prevent the growth of any very large sized branches, and consequently of knots. This tree naturally assumes the habit of *P. sylvestris*, but often expends itself in large branches without a leader. It has the reputation of withstanding the effects of the sea air, and of growing tolerably on chalky soils; but its high price, (7*s.* 6*d.*) has hitherto rendered it available only to a few; and as it has not yet ripened its seeds in this climate, it will no doubt continue a high-priced plant. Grafting it on *P. sylvestris* or *P. Laricio*, is the only mode of overcoming the difficulty.

Pinus Pinea, Linnæus (Stone Pine).—Leaves two, and sometimes three in a sheath. Their being always in pairs is an error generally current amongst botanists. The length of the leaves is about four inches, slightly waved, green on both sides alike, the tips of many of the branches retaining the leaves in their seedling state, which are about three-quarters of an inch long, proceeding singly from the twig. The leaves in this last state are of a pleasant sea-green colour. Buds are smaller than those of the pinaster, redder, and without resin. Cone from five to six inches lighter than those of the pinaster. Seeds three-quarters of an inch in length, encrusted with a thick bony case.

This pine is scarcely known in England *as a tree*; but in Italy, it assumes the majestic habit of the finest of our coniferæ, having a tall straight trunk, and a thick branchy head, not unlike the *Pinus Pinaster*. Its characteristic appearance in landscapes has been sketched by Gilpin; but there is every reason to suppose that his remarks were suggested by the pinaster, which, however, as seen in England, gives a very good idea of the former tree in its native habitations. It belongs naturally to Italy, Greece, Spain, and according to some authors, the southern parts of France, where it is found only in the neighbourhood of houses built for many years. It has been common in Britain for the last three hundred years; and one of the best proofs of its being unsuited to this climate, either as a timber tree, or as a first-class ornamental plant, is found in the fact, that no lofty specimen of it is noticed in the sylvan records of Britain.

The plant is associated with the classics, chiefly on account of the delicious kernels of the fruit which were very much prized by the ancients. In their preserved state, they were found in the provision rooms of Pompeii and Herculaneum; and throughout Italy, they are yet used along with raisins and almonds for dessert. Its wood is much inferior to the timber produced by other pines that grow twice as rapidly, so that it will never attain to any eminence in that respect. In English shrubberies, it forms a full-bodied spreading bush, and has a good effect in secluding places near to rock-work. The seeds may be purchased in London, at about 2*s.* per lb., and the best way to treat them is to steep them in rather hot water for two or three days previously to sowing them. The time for sowing is the middle of April; and it is important to remember that the soil in which they are placed should be kept rather moist with warm water for six weeks, when they will appear above ground. Where convenient, a bottom heat is recommended; for, on account of the hard shells in which they are enveloped, they require a good deal of excitement to start them. The young plants are somewhat tender, and should be kept protected during winter in a frame well matted over; or in the open ground, by having branches with leaves on, stuck closely around them. They require to be shifted from place to place every two years, otherwise they form a hard and fibreless tap-root, which fails to support them on their removal. If in pots, they require shifting all the same. When finally removed, they should be planted deep, and staked, so as to resist the wind.

Varieties.—*P. P. fragilis.*—A variety extensively cultivated in Naples for the sake of the seed, which is enveloped in a thin and tender shell. The kernel is eaten by the inhabitants, and is sweet and agreeable. The thin and tender shell forms the only distinctive difference when compared with the common plant.

P. P. cretica.—Leaves smaller, finer, and rather more abundant than in the species.

P. P. americana.—A plant in no respect differing from the *P. Pinea*; which, having been sent from America, was reckoned at least to be a variety. As Lindley observes, no tree has accompanied Europeans so closely as the Stone pine (from the seeds being edible) and this will account for old trees having been found in the new world, where it is not indigenous.

Pinus austriaca, Höss (Austrian or black Pine.)—Leaves two in a sheath, keeping together when the tree is young, three to four inches in length, twisted, bluntly-pointed, green all over alike. Buds about an inch in length, reddish-brown. Cones of the shape of those of *P. sylvestris*, of a light-brown colour, smooth and shining.

A native of the mountains of Austria, growing to the height of sixty and seventy feet. The wood of this tree has the reputation of being very enduring; and in withstanding the effects of alternate moisture and dryness, it is said to equal the larch. The price at which plants are sold (7*s.* 6*d.* per 1000 for one year seedlings, and 15*s.* for two-years' seedlings), renders it within the reach of every planter; and as it is now (1846) planted extensively in Scotland, a fair trial will be given to it. It is very necessary to watch this pine during the first few years of its growth, lest it should assume the habit of a bush merely. It is very apt to do so when potted, but in the free ground, it generally furnishes itself with a strong tap root, and a good leader. No pine excels this one in producing turpentine; and its roots are used in the same way as those of the Scotch pine, as a substitute for candles. At Rozelle in Ayrshire, Mr. Locke states, that comparing this tree with the Scotch pine, the former was found, in all soils and situations in which it was tried, to take the lead in every instance. His only objection to the more extended planting of this truly fine tree, is the avidity with which it is devoured by game when first planted out. In order to obviate this, he recommends that the plants should be protected in a nursery till they are strong, and about eighteen inches in height. Seeds may be obtained at 4*s.* per lb.

Pinus Laricio, Poiret (Corsican or Larch Pine).—Leaves, generally two in a sheath, long, waved, frizzled, abundant, and of a deep green. Cones of the shape of *P. sylvestris*, two to three inches in length, with rugged truncated scales. Buds long, and particularly sharp, resinous, yet not covered with exudation. A native of the mountains of Corsica, Spain, Greece, and Turkey, attaining sometimes to the height of one hundred and fifty feet.

A noble tree destined to occupy an important station in the British Sylva. When planted in groves, this pine bids fair to grow to the height of one hundred feet; but in very exposed situations, it is apt to change its leading shoot, which no doubt arises from the topmost bud being injured by the cold. According to the testimony of many planters, this tree excels all others in the rapidity of its growth, which is frequently, in its young state, at the rate of two and a half feet in the year. It certainly does not carry that degree of thickness along with its height, which most pines do; for even when in the enjoyment of free air on all sides, it has the appearance of a plant which had been drawn up for want of space. The trial which has been made of this tree throughout Britain, does not justify its being recommended for sandy and barren tracts of land in very exposed places; but for planting on the sides of hills, and for valleys, it is well fitted. For scenic effect, it would be difficult to select a better tree. Light and darkness are upon it in strongest contrast; and in this respect, it is perhaps superior even to the better variety of Scotch pine. The very altitude of the tree gives it a commanding aspect, and it looks exceedingly well planted along with other pines, over which it rises in high towers. The wood is good for masts, though not equal to that of the *P. sylvestris.* When divested of the outside, or sap-wood, carpenters consider it equal to any other pine, and in its native countries, it is used by them in flooring, for beams, and for building purposes generally.

The price of young plants is unreasonably high; one shilling, and sometimes one shilling and sixpence being charged for each. This species is strongly recommended to the attention of extensive planters, for there is no doubt that when large quantities are required, a proportionably low charge will be made. In the mean time, young shoots should be grafted on the tops of small plants of the Scotch pine; a method of increasing the species which has been most successfully adopted by the French government. The mode of raising young plants from seeds, is exactly as detailed in the case of the *Pinus sylvestris.*

This tree is particularly worthy of the attention of all those who wish speedily to confer a show of sylvan garniture about their residences. In this respect it may accompany the willow, poplar, and larch. There are those again who complain that one man's life is too short to realize the full beauty of trees: this pine will obviate that objection, and become a high tree, striking in the landscape, in the course of twenty-five years. In cases where it is expected to grow very vigorously, trenching of the soil to the depth of at least two feet is absolutely necessary; and if strong stakes are put in to support the plants, it will add to their success.

Varieties.—Nominally, the varieties of *P. Laricio,* are many. Continental catalogues are exceedingly apt to mislead planters, who have repeatedly found the same species under half a dozen different names. Such as are distinct are believed to be the two following:—

P. L. corsicana, Delamarre. A tree growing nearly as tall as the species, cones smaller, and of a tawny colour.

P. L. caramanica, Bosc. Introduced into France by Olivier, in 1798. Throughout that country it bears the name of *P. romana,* which title is also adopted by the Horticultural Society of London, in whose garden there is a fine specimen. Seeds which were sent by the late Mr. Loudon, to Methven Castle, produced plants which grow more rapidly than the common Scotch fir, and the gardener there thinks that the tree may be found suitable to high districts throughout Scotland. This plant is more compact than the species, carrying a greater bulk of stem with it, and less subject to be operated upon by high winds. The leaves of this plant are rather straighter than in the species, and the buds and branches are of a redder colour.

b. Scales of Cones Spiny at apex.

13. *Pinus Pinaster,* Aiton (Cluster Pine).—Leaves, in pairs, very long, channelled, stiff, and of a darker green than those of the *P. sylvestris.* Cones in clusters, whorled, much shorter than the leaves, without footstalks, ovate, and about four inches long. Buds almost free from resin, woolly, and about three-quarters of an inch in length. A native of Italy, the southern parts of France, of Greece, Asia, and the Himalaya. The north of France and Germany do not possess it as an indigenous tree. It is very abundant in Spain, and is found in great perfection on the shores of the Mediterranean.

The largest plantations of this tree in Britain, are at Westwick, in the county of Norfolk, on high, barren tracts of land, where it thrives remarkably well, and attains to a great bulk. These plantations were commenced by J. Berney Petre, Esq., father of the present proprietor; and in the *Transactions of the Society for the Encouragement of Arts,* appears the following communication relative to the planting of these trees. He says: "Having been a planter of firs and forest trees for more than fifty years upon a large scale, my friends have often solicited me to lay the particulars before your Society, as few in the kingdom have exceeded me in this pursuit. I am at length induced to lay my labours before you in the following statement:—about thirty years ago, I planted in my park, and on the heath adjoining, about 200 acres with different trees; the soil of the latter was so poor that the Scotch firs which I chiefly appropriated to that place *died after having been planted fifteen years,* owing to the poverty of the soil and their exposed situation. The pinaster, or cluster pine, has always been a favourite tree with me for the beauty of its foliage, and goodness of the timber. I have in my groves, I believe, some of the finest in the kingdom, estimated by Mr. Nathaniel Kent, of Craig's Court, a member of your Society, as containing five loads of timber in a tree, and upwards of eighty feet high; it therefore occurred to me to raise some young plants from them, and when these plants were two years old, I filled up with these young pinasters the vacancies occasioned by the death of the Scotch firs, and though planted sixteen years after them, they are now by far the largest and handsomest trees. Upon observing the rapid growth of these trees, I was induced to enlarge my plantations, and took into my park 200 acres more, which I planted entirely with pinasters, except in the valleys where other trees grow. My pinaster plants were all raised from my own seed; and this year their progress has been astonishing, and they are the admiration of all persons who have seen them. I am preparing to add another hundred acres, and have raised above 200,000 plants for that purpose. I shall then have a plantation of 500 acres, with a five-mile drive through it. December 1st, 1809." This is cheering information to proprietors of poor soil. It has been generally understood that the Scotch pine is, of all trees, the least scrupulous as to the quality of the land they may be placed in; but we have a proof here, that another individual of the cone-bearing family, is equally, if not more, serviceable in sheltering bleak and barren districts.

The fact that few of the new pines produce wood at all equal to that of the *Pinus sylvestris*, which can be got at such a low price throughout Britain, is at once a barrier to the introduction of many species of the noble family now under consideration. This circumstance, however, ought not by any means to operate against the wide-spread introduction of the *P. Pinaster*, and its valuable variety, the *P. P. minor*, or as the latter is generally called, the *Pinus maritima.* The quality of the timber of any given tree is certainly one of the first points of importance; but if one can be selected which shall successfully carry down vegetation to the sides of the ocean, that feature should be sufficient of itself to stamp it as an object most worthy of cultivation.

To dilate upon the grand expanses of the sea, beheld from the deep recesses of a sylvan bower, is rather beside the object of this paper, yet it must not be overlooked that amongst the few trees which we possess, suitable for maritime situations, the *P. P. minor*, ranks as one of the first objects to combine with the sublimest of all pictures exhibited on earth. Sea-side planting is, comparatively, a new study, but so far as it has been carried out, it has afforded a satisfaction which the proprietors of inland plantations have little conception of. Nature is ever ready to second and permanently record the well-directed exertions of men, and in this department, as well as in others, the beautiful adaptation existing between certain objects and localities within her domain, is admirably exemplified in the luxuriance with which the plant rises when exposed to the sea air. On a cliff at Trimingham, in Norfolk, many of the plants may be seen rising fearlessly within fifteen yards of the German Ocean. What it may do for the immense districts lying waste in such situations, depends altogether on the enterprise of proprietors who may be possessed of maritime lands.

This tree, as an ornamental object, is unquestionably grand. In favourable situations it becomes a tall tree, displaying large portions of its bare reddish-brown branches, tufted with masses of rich foliage. The bark of the stem is deeply furrowed and coarse, and where this pine prevails, the feeling invariably awakened is, that you are in the neighbourhood of tremendous rocks and crags.

The wood of the pinaster is reckoned softer than that of the common Scotch fir; but according to the woodman at Mr. Petre's, deals of it, when raised on poor soils in exposed situations, are quite equal to any home-grown pine timber. In the countries where it is indigenous, its chief use consists in its resinous products, tar, and lampblack. In France, it has been the means of reclaiming immense tracts of land which were perfectly destitute of any sort of vegetation. The plan adopted was, to sow the seeds along with those of broom, covering them with branches of trees so as to prevent the wind from removing the soil in which they were deposited. The broom affords shelter to the young pinasters for the first few years, after which it is overtopped and speedily smothered.

The way in which the seeds of this tree are procured, and their treatment, are somewhat peculiar to this pine, and require special observation. The cones are fully ripe in the month of March, when they should be gathered. I pay at the rate of two shillings per sack for the cones, and before they reach my nursery, an additional charge of four-pence per sack is made for carriage. The kiln, on which they are laid, and which I erected solely for the purpose of drying Coniferæ, is in shape similar to a malt-kiln; but the cones are laid on *wood* instead of bricks, the latter admitting the heat to that degree so as to toast the seeds, and, of course, destroy their vegetating power. The boards on which the cones are laid are full of holes, through which the seeds fall; and as they are by this means collected in the bottom of the pit, which is fifteen inches below the level of the fire-place, they are quite beyond the reach of any heat calculated to injure them. A cessation of heat takes place twice in a day, when the cones are completely turned over, and the boards swept clean of all the seeds, which are then removed from the bottom of the *pit*, or technically, the *kiln-logie.* The pinaster cones are much more difficult to open than those of any other pine; and if they are gathered early in the season, they require to be kept on the kiln for two days. The wings have then to be rubbed off, and the seeds sown in light land during the month of April. They should not remain in the seed-bed longer than two years, because they send down strong tap roots, without furnishing themselves with small fibres. This remark holds good with regard to this plant, so long as it remains in the nursery; for unless it is continually shifted, it will be deficient in that bushiness of root, so essential to the species. One year seedling plants are ten shillings per thousand.

Though it will seldom be found necessary for any person not in the seed business to erect a kiln for opening the cones of Coniferæ, it may be as well to state that the process is exceedingly hazardous. On account of the heat required (about 120 degrees Fahrenheit), and the inflammable nature of the cones themselves, the probability is that inexperienced persons would set the kiln on fire. It should therefore in every instance form a detached building, and no boy should be allowed to tend the fire. The cones, after being so dried, form of all things the most desirable material for lighting fires. Threepence a bushel is readily paid for them in the city of Norwich for that purpose. The seeds of the pinaster have a thick crust or shell about them; and I have found it an excellent plan to steep them for a few days previous to sowing in water, kept as near as possible milk-warm. This helps them to vegetate. If sown in the usual way, a part of them only will come up three weeks afterwards, and the remainder during the season. In dry weather watering the beds is absolutely necessary, when they are sprouting, because they vegetate, and then stop mid-way for want of moisture at their newly-formed roots. Seeds of the Pinaster may be always procured of the London seedsmen at from 2*s.* to 3*s.* per lb.; but I am not aware that they keep the better variety, *P. P. minor*, distinct from seeds of the common tree.

Varieties.—These are numerous and important; and as is the case with *P. sylvestris*, it may be safely questioned whether some of them are not of greater value than the species itself. At the same time, there are plants in nurseries belonging to the pinaster, which differ in name only, and which, having come from different quarters of the globe, have on that account been considered worthy of a new title. Those received from Van Dieman's Land, America, and other places, have in all probability been gathered from trees raised from seeds, brought thither by emigrants many years since, and will present nothing really distinct from those already in the British Arboretum. Those considered distinct are the following:—

P. P. Lemonianus, (Sir Charles Lemon's Pinaster).—Found in the woods of Sir Charles Lemon, at Carclew, Cornwall. In the *Transactions of the Horticultural Society* it is thus described: "In foliage it is similar to the pinaster; but it differs in the general habit of the tree, and in the form and position of the cones. In the common pinaster, the cones, of which there are generally three or four together, are situated behind the shoots of the whorl, and, in the mature state, point backwards. In this obscure species the cone is single, and it universally occupies the place of the leading shoot, the side shoots being behind it. The necessary consequence of this mode of growth is, that the tree can have no regular leader, but each year one of the side shoots strengthens, and continues the growth for the ensuing season; the year following, the same process is repeated in another direction, giving the stem of the tree a zig-zag appearance, which it never entirely loses." According to the statement of the forester at Westwick, Norfolk, the variety is to be found in the woods of his employer, Mr. Petre.

P. P. minor.—A tree hardier than the species, and plentiful along the coasts of France, valuable on account of its braving the sea breeze, and growing on the most sterile tracts of land. Cones smaller than the species; leaves stiffer, shorter, and broader. The tree does not grow so high as the species, hence at Westwick, in Norfolk, where it abounds, it is called the "False Pinaster." It is also found in the woods of Mr. Marsham, of Stratton Strawless, where the writer had a large quantity of the cones collected; and from the seeds extracted he has now in his nursery grounds about 50,000 thriving plants of this valuable tree. The wood is more compact and durable than the common pinaster.

P. P. Escarenus, Risso.—A very distinct variety, the leaves of the same length as in the species, but of a lighter green. Cones small, short, egg-shaped. Introduced by the Earl of Aberdeen, who presented a specimen to the London Horticultural Society, in whose garden is a tree fifteen feet high.

P. P. variegatis.—This is a plant with variegated foliage, which forms its only distinction. A specimen in the garden of the Horticultural Society is from fifteen feet to twenty feet high. The mode of propagating this variety is by grafting it on the common tree; but it is by no means in general favour.

P. P. nepalensis.—Raised from seeds sent by Dr. Wallich, and is the least distinct of all the varieties. The tree is somewhat more compact than the species, and the branches more horizontal in their growth. The cones are also narrower.

P. P. Massoniana.—A variety probably

belonging to the Pinaster family, but as yet undetermined. Raised at the Cape of Good Hope from seeds sent from China. No living plants yet introduced.

Another variety, which promises to be distinct, is noticed by botanists, having cones similar to those of the Pinaster, though much smaller. It was found on the mountains of India by a collector sent out by the Duke of Devonshire, and its general appearance was like a stunted Scotch pine. The cones most resemble those of *P. P. minor*. Young plants are at Chatsworth, Derbyshire, and probably in the Garden of the Horticultural Society.

Pinus pungens, Michaux (prickly-coned Pine).—The leaves are in pairs, thickly set, short, and acute. Cones ovate, or rather top-shaped, and armed with very sharp incurved spines. The seeds are about the size of those of *P. sylvestris*, rough, and a majority of them black.

Michaux, the American arboriculturist, states that this tree is confined to a narrow geographical range; and that as it occupies a tract of country where the soil is good and the air salubrious, it will in all probability be the first to disappear before the inroads of cultivation. In form, it resembles the Scotch pine, though much more apt to break into a branchy head, and consequently it seldom attains a great altitude. Its timber is without praise, and in all probability it will remain in Britain valuable only as contributing to the variety of the genus. It has been forty years in this country, and the finest specimen, which is at Dropmore, is thirty-six feet high.

Pinus inops, Aiton (Jersey or poor Pine).—Leaves two in a sheath, about two inches long. The sheaths have three or four distinct rings. The colour of the leaves is dark green. Buds are small, brown, and resinous, and are generally surrounded by three small buds. Cones about three inches long, drooping, and covered with prominent spines. Young shoots of a purplish or violet colour, especially in the more vigorous ones.

In stature this tree is inferior to the Scotch pine, attaining only to the height of forty feet, full of branches, which proceed irregularly from the trunk, like those of a broad-leaved tree. The habit of this pine prevents it from furnishing timber of a useful size, and throughout the interior of North America it is represented as fit only for fuel, the large proportion of sap wood which it contains speedily inducing decay. The balsamic odour which it emits in hot weather is certainly an inducement to have it in every pleasure ground. Plants are raised from seeds in the usual way; but it should be grafted on high trees of the Scotch pine, when it would assume a singular and not inelegant appearance. Perhaps the finest young plants in England are in the plantations of Sir Edward North Buxton, Bart., at Runton, in the county of Norfolk. At Rozelle, in Ayrshire, plants of this species make growths of from fifteen to eighteen inches. They have proved to be perfectly hardy, having withstood the severity of 1837-8 without the slightest protection; but generally it is a miserable looking tree. Cones are occasionally to be had in London at about 8*d.* per quart.

Pinus mitis, Michaux (soft-leaved, or Yellow Pine).—This valuable species is by many called *P. variabilis.* Leaves four inches in length, two and sometimes three in a sheath, channelled on the upper surface. Cones drooping, solitary, with footstalks, and the scales bearing inflexed spines.

This is one of the most valuable American pines, and is well worthy of the attention of British planters on account of the timber which it produces. According to Michaux, it is used throughout the northern and middle states, and in Virginia, in the construction of doors, sashes for windows, and as flooring, being more solid and lasting than any other tree indigenous to that country. It abounds in Maryland, Virginia, New Jersey, Albany, Pennsylvania, in South Carolina, and in the upper part of Georgia. It has been in England about a century, yet it is not often found even in our finest ornamental plantations. As an object of beauty, it is by no means deficient: its trunk is straight, something like that of a spruce fir, and the disposition of its branches very much resemble that of the latter tree. Its height, under favourable circumstances, is from sixty to seventy feet. It forms an article of considerable commerce with this country; and at Liverpool it is known under the name of the New York Pine. The attention of several railway companies has been directed to this tree as suitable for railway sleepers, and an importation has been made for that purpose. It will of course cost more than the home-grown pine at first, but it is expected to remain sound longer than six or seven years, the time which the timber grown in England lasts. Plants are 3*s.* 6*d.* each.

As mentioned in reference to several of the foregoing species, Sir Edward North Buxton's plantations (which skirt the sea-beach in some places), exhibit very thriving young plants of many sorts of pines which are generally considered as unfit for the climate of Britain. This is an important fact. It would, however, be premature to conclude that all our more tender pines would find an asylum if placed in similar situations, because those referred to have only been in their present places for five, six, and seven years.

NEW ESCULENT PLANTS.

At any time an addition to our lists of cultivated esculents is regarded with interest, and deservedly so, for though such additions may not as regards intrinsic worth equal even some of those kinds we already cultivate, yet they afford variety on our tables; and there is besides the probability of their proving adapted to certain soils and circumstances, where other more familiar kinds do not succeed so well. At the present juncture, however, after the partial failure of the crop of our chief esculent root—the potato—in the summers of 1845 and 1846, additions of this kind become invested with much increased interest; and this is equally the case whatever view may be taken of the visitation referred to.

We have been much interested in the perusal of an account of certain roots which are employed by natives of North West America very extensively as articles of food, and which might prove useful to ourselves in a cultivated state. This account has been furnished by Mr. C. A. Geyer, and was published in a recent number of the *London Journal of Botany*. From this source we gather the following notes on the subject referred to:—

The Gamass, Camass, or *Quamash* (*Camassia esculenta,* Lindley; *Narthecium Squamash,* Pursh; *Phalangium Squamash,* Nuttall.)—This is a liliaceous plant found so abundantly on the fertile prairies of the great plateaux of Upper Oregon, as to give its name to them; they are called the Gamass plains or prairies, and have a general elevation of 3,000 feet. When this plant is in bloom, these extensive plains are covered as with a carpet by its deep blue flowers. The plant much resembles a common blue hyacinth, and the bulb is also of about the same size, but in texture and shape more like that of *Narcissus Tazetta.* The raw bulb resembles in its substance the common squill; by baking it acquires a sweet taste, and when boiled the taste is not unlike the syrup of squills, but not so sweet. The Gamass of the Oregon seems to differ from that of the Missouri and Illinois in being altogether more robust, having bulbs twice as large, shorter, stiffer, leaves, and longer racemes of larger flowers.

Mr. Geyer gives the following account of the digging and preparing of this root:—The digging of the Gamass bulb is a feast for old and young among the Indians. The different neighbouring tribes meet on the same plain, and mostly at the same time, at the same spot where their forefathers met. Here the old men talk over tales of olden time; the young relate hunting adventures, and pass their time in gaming; while on the women alone, young and old, rests the whole labour of gathering that indispensable food. The young women, especially, vie with each other in collecting the greatest possible quantity and best quality, their fame for future good wives depending much on the industry they show there. Many a marriage is closed after the Gamass are brought home. The Indians gather this root after their return from gathering the Biscuit root. The whole village is active collecting horses and sacks, the latter chiefly of Thujabass or Helonias roots, and at last family after family leave the village for the plains. The digging takes place as soon as the lower half of the flowers on the racemes begin to fade, or when the flowering is entirely passed. For the purpose, the Indian women use a stick two feet long, curved like a sabre, of hawthorn wood, which is provided with a cross piece of elk horn at the top, serving as a handle. This instrument they use with astonishing dexterity, so that they very seldom strike the point twice after the same bulb. Four or five sacks of raw bulbs is a common day's labour, which dwindle to about two after baking and drying. As soon as a sufficient quantity of bulbs are gathered, they prepare for baking; for that purpose they dig or scrape a hole in the ground three or four feet in depth, make a fire and throw in a layer of red hot stones, then a layer of clean grass over these, and now a layer of Gamass, the latter having been cleaned from the adhering soil; this is repeated until the hole is level with the ground above; the fire is now made on the top of the pit, and kept burning for twenty-four hours or longer. When the Gamass are baked, the Indians feast from lodge to lodge, and nothing can make them recollect that they are hungry and starved for nearly two months.

The Gamass appears to have been introduced to this country in 1827; and is a strikingly handsome bulbous plant with large flowers: a border of peat earth is recommended for it, and the cool shade of a north wall. It does not appear to have been cultivated at all in this country as an esculent.

The Biscuit Root (*Ferula sp.*)—This is a small umbelliferous plant, also producing delicate tubers, which are much used as food. There appear to be several species of Ferula, of which the tubers of all are used in a similar way. That known as the Biscuit root, is represented as a humble plant emerging from the sand under the influence of the first rays of the sun in March or April; in about three weeks attaining a blooming state, and again in about the same period ripened, and its dried stalks scattered over the plains by the winds. Thus the whole period of the vegetation of this plant does not exceed six weeks. The tubers when three or four years old are about the size of a walnut, but these are inferior to the thin spindle-formed two-year old tender tubers. The substance is farinaceous, snowy white, and in the young tubers not entirely insipid. The Indians gather the tubers when the plant is in the flowering state. It is found in the sandy woods in the basaltic plains of Upper Oregon, at an elevation of about 2000 feet.

Mr. Geyer mentions another and more remarkable species of Ferula (the *Pooh-Pooh* root of the Spokans) which he had not seen growing, and only knew from a few dried leaves which were twice the size of the former; the tubers of this are about the size of a small potato, and contain a white farinaceous substance; they have a rather strong but pleasant aromatic odour and taste resembling citron, which they keep for more than a year. They are rare. The Indians gather them in small quantities, and string them. This, he says, would be a great acquisition for our kitchen gardens.

The Spætlum, Bitter root plant, or Racine amere (*Lewisia rediviva*, Pursh). The Indians value this root highly, and it is with them, prepared with the marrow of the bison, regarded as a most dainty dish. Travellers also use it as a very wholesome food, and it is prized notwithstanding its strong bitter taste, which resembles the bitter of China bark. The plant is related to Mesembryanthemum, and has a fusiform flexible root, capitate stem, the leaves soon dying away, the flowers handsome, of a beautiful rose-purple colour. The root is dug during flower time, when the cuticle is easily removed, by which it acquires a white colour; it is brittle, and by transportation broken to small pieces. When the bark is thus stripped off the roots, they appear to consist of little else than starch. Before boiling it is steeped in water, which makes it swell, and after boiling it becomes five to six times larger in size, and resembles a jelly-like substance. Being a small root, it requires much labour to gather a sack, which generally commands the price of a horse. Six weeks at most is the period during which the Lewisia vegetates above ground for the whole year. At first the fascicles of leaves show themselves soon after the scapes; as soon as the first flower begins to open, the leaves die away; the flower is only open during sunshine. The plant occurs sparingly on the plains of the Upper Platte; quite abundant on the Upper Clarke river, which is on that account denominated Rivière aux Racines Amares by the Canadians; but far more abundant on the arid basaltic plains of Upper Oregon, at an elevation of about 2000 feet. The flowers are pale in colour on rocky ground, but it is a very elegant plant in the sandy woods.

The plant was named Lewisia, by Pursh, from having been first collected by Capt. M. Lewis; the name *rediviva* was appropriately given in consequence of Lewis's preserved specimen having revived and grown at the Kew garden, after having been about three years out of ground between paper. In our catalogues it is recorded as having been introduced in 1826.

Helosciadium californicum.—Mr. Geyer mentions an umbelliferous plant, which is found throughout Upper Oregon, on grassy moist slopes, and in shady meadows, the tubers of which are truly delicious, and one of the dainty dishes of the Saptona Indians. He supposes this plant to be the *Helosciadium californicum* (Douglas). It is an inconspicuous umbelliferous perennial, with a black tuberous root. By boiling the tubers like potatoes they burst open lengthways, showing a snowy white farinaceous substance, which has a sweet cream-like taste, and somewhat of the aroma of young parsley leaves. This plant Mr. Geyer thinks would be an excellent addition to kitchen gardens. It holds in Oregon exactly the place which the wild carrot does with us; and there is no doubt the roots would similarly increase in size by cultivation.

A comparison should hardly be drawn between these plants in their aboriginal condition, and the cultivated varieties of our esculent vegetables: but if they are compared it should be with the latter also in their wild condition. Such a comparison is full of encouragement, for perhaps hardly any of our cultivated vegetables have sprung from subjects originally so promising as these. The proper course would be to cultivate highly, to raise successive crops from seed, preserving in each generation for the purpose of seeding *those only* which manifest some improvement. In this way there is little doubt, that varieties as far removed in excellence as the cultivated cabbages or carrots from their original stock would be obtained.

NOTES ON FLOWERS AND FLOWERING PLANTS.

LACHENALIA ORCHIOIDES, *Aiton* (Orchis-like Lachenalia). — Liliaceæ § Scilleæ. — A bulbous plant, producing one or two oblong strap-shaped leaves, and a round flower stem spotted with dull purple, and bearing a spike of flowers just above the leaves; the flowers are crowded together, the three outer segments greenish, the three inner ones purplish, edged with yellow. A native of the Cape of Good Hope. Introduced in 1752. Flowers in March and April. *Culture.*—Requires a cool green-house; loam and peat; well ripened after growing; propagated by off-sets.

VICTORIA REGIA, *Lindley* (Victoria Water lily).—Nymphæaceæ § Euryalideæ.—This is the most magnificent aquatic plant known. It has the character of our water lilies, but is very much larger. It is supposed to be a perennial, but this is not positively known; the root is large and tuberous, with numerous fibres. From these tubers proceed the floating leaves on long prickly stalks; they are of prodigious size, four to six and a half feet in diameter, nearly round, peltate, with from two to five inches of the margin turned up all round, forming a rim like that of a tea-tray; the upper side is green, the lower side deep purple, with copious prominent prickly veins. The flower stalks spring from the root; they are prickly, and each bear one flower, rising a little above the water; the flowers are from a foot to fifteen inches in diameter, fragrant, with very numerous oblong concave petals, which gradually pass into filaments, the outer ones being white, changing to pink, the inner deep rose coloured. A native of South America, found chiefly on the waters tributary of the Amazons, and Rio Plata, and probably existing in all those great rivers which intersect the immense plains eastward of the Andes. Introduced to Kew in 1846; but the plants have since died. Time of flowering unknown. In the River Berbice, it was met with in a flowering state on the 1st of January. *Culture.*—Requires stove heat, and a large body of water, which should be warmed in the growing season to from 80 to 90 degrees: the roots should be planted in loam; propagated by seeds, probably also by division. (29)

STATICE EXIMIA, *Fischer and Meyer* (large pink Sea Lavender).—Plumbaginaceæ § Staticeæ.—A perennial plant, growing from one to two feet high, with a tuft of oblong ovate root leaves, and a leafless branching flower scape, the branches consisting of a dense bundle or cluster of small pinkish lilac flowers, which, from their number and arrangement, have a very pretty appearance. A native of open places in the south of Songaria, on the Chinese limits. Introduced in 1844. Flowers from July to September. *Culture.* — Hardy; sandy loam and peat; propagated by division of the plant, or by seeds. (30)

CROCUS NIVALIS, *Bory St. Vincent* (snowy Crocus).—Iridaceæ.—A small bulbous plant, growing three or four inches high, the flowers slightly in advance of the leaves, rather small, but compact and well formed, of a deep violet purple colour, with an orange blotch at the base. A native of the mountain of Delphi, in Eubœa, and other mountains of Greece. Introduced in 1845 (?) Flowers in March and April. It has been called *C. sublimus* (Herbert).' *Culture.*—Hardy; any common soil; propagated by off-sets from the roots seeds are liable to variation. (31

CROCUS VELUCHENSIS, *Herbert* (Veluchia Crocus).—Iridaceæ.—A small bulbous plan growing about three inches high, with com paratively large flowers rather in advance the foliage; the flowers are well formed, th petals somewhat concave, of a violet tint var ing in intensity, but having a darker tran verse bar near the top of each segment; i some instances, the tip above this bar is nearl white. A native of Mount Veluchi, i Ætolia. Introduced in 1845 (?) Flowers i March and April. *Culture.*—Hardy; commo soil; propagated by off-sets from the roots seeds are not to be depended on, as they ofte produce varieties. (32

CALOSCORDUM NERINEFLORUM, *Herbe* (Nerine-flowered Caloscord). — Liliaceæ Scilleæ.—An interesting little bulbous plan with a few roundish very slender leaves a spa long, and throwing up from the small bulbou root a slender flower stem of six or eig inches high, bearing at the top an umbel a dozen or more rather pretty rose-coloure flowers, about half an inch in diameter, an composed of six somewhat recurved oval seg ments. The plant is nearly allied to th Alliums or garlics, but has none of their smell A native of Chusan. Introduced about 184 Flowers in summer. *Culture.*—Requires frame or greenhouse; peat and loam; propa gated by off-sets. (33

CYANANTHUS LOBATUS, *Wallich* (lobe Cyananth). — Polemoniaceæ (?) — A prett little branching perennial plant, with sma fleshy roots, and upright stems bearing alte nate, stalked, rhomb-shaped, incised leave and at the tips, a solitary flower, an inch an a half across, of a violet purple colour, divided al most to the centre into five spatula-shaped lobe A native of the higher ranges of the Hima layan mountains. Introduced in 1844 Flowers in August and September. Th position of this plant in the 'natural arrange ment' of vegetables, is yet (1847) a botanica enigma. *Culture.*—Hardy, but requires to b kept somewhat dry and at rest when not grow ing; sandy peat and leaf mould; propagate by cuttings. (34

PINUS GRENVILLEÆ, *Gordon* (Lady Gren ville's Pine).—Pinaceæ § Abieteæ.—A larg and very robust growing tree, attaining i Mexico, a height of from sixty to eighty feet The leaves grow in fives, thickly set, and of dark green, very long, and slightly saw-edged the sheaths at the base nearly an inch and half long, and rather rough and scaly. The cones grow singly; they are pendulous, quite straight and tapering regularly, about sixteen inches long, and three inches and a half broad at the base. The buds are very large, imbricated, not resinous, and thickly set with long brown scales. It is called by the natives *Ocote macho*, or male pine. A native of the Cerro de San Juan, or Saddle mountain near Tepic, in Mexico. Introduced in 1845. *Culture.*—Probably hardy, but not yet (1847) tested; sandy soil; propagated by seeds, or by herbaceous grafting on stocks of nearly allied habit. (35)

Aconitum autumnale, *Lindley* (autumn flowering Aconite).—Ranunculaceæ § Helleboreæ.—A pretty herbaceous perennial, growing upright about three feet in height, and producing its flowers in a spike-like arrangement on the upper part of the stems; the leaves are palmately cut similar to those commonly known; the flowers are lilac and white, with a heavy and unpleasant smell. A native of the north of China. Introduced in 1846. Flowers late in the autumn and in winter. *Culture.*—Hardy; common soil; propagated by division of the plant or by seeds. (36)

Crocus Salzmannianus, *Gay* (Salzmann's Crocus).—Iridaceæ.—A small bulbous plant, growing about six inches high, the flowers growing up with the leaves, large, and of a light purplish colour, paler at the edges. A native of the small hills near Tingidem. Introduced in 1845 (?) Flowers in August and September. This species is also known as *C. tingitanus* (Herbert). *Culture.*—Hardy; common soil; propagated by off-sets from the roots, not by seeds, which vary. (37)

Crocus Byzantinus, *Parkinson* (Turkish Crocus).—Iridaceæ.—A small but very pretty bulbous plant, growing four or five inches high, and flowering without leaves, that is, the flowers and leaves grow at distinct periods; the three outer segments of the flowers are broad and expand much, and are of a violet purple; the three inner ones are nearly erect, and much narrower and paler; in the centre is a large purple feathered stigma. A native of the woods of Bannat, and the neighbourhood of Crajova in Wallachia. Introduced before 1629, but confounded with other kinds. Flowers in September and October. It bears also the names of *C. banaticus* (Gay); *C. speciosus* (Reichenbach); and *C. iridiflorus* (Heuffel). *Culture.*—Hardy; common soil; propagated by off-sets from the roots. (38)

Pinus Gordoniana, *Hartweg* (Mr. Gordon's Pine).—Pinaceæ § Abieteæ.—A handsome tree, with numerous regular branches, not very robust, but attaining in Mexico a height of from sixty to eighty feet. The leaves grow in fives, and are very long, slender, very dense, and of a light green colour; in fact it has the longest and handsomest foliage of any introduced species; the sheaths at their base are about a quarter of an inch in length, rather rough and scaly. The cones are pendulous, mostly solitary, slightly curved, and tapering regularly, from four to five inches in length, and one and a half broad near the base, quite destitute of resin, and on short footstalks. The buds are very scaly, non-resinous, and of moderate size. It is called by the natives *Ocote hembra*, or female pine. A native of the Cerro de San Juan, or Saddle Mountain, near Tepic, in Mexico. Introduced in 1845. *Culture.*—Probably hardy, but not yet (1847) tested; sandy soil; propagated by seeds, or by herbaceous grafting. (39)

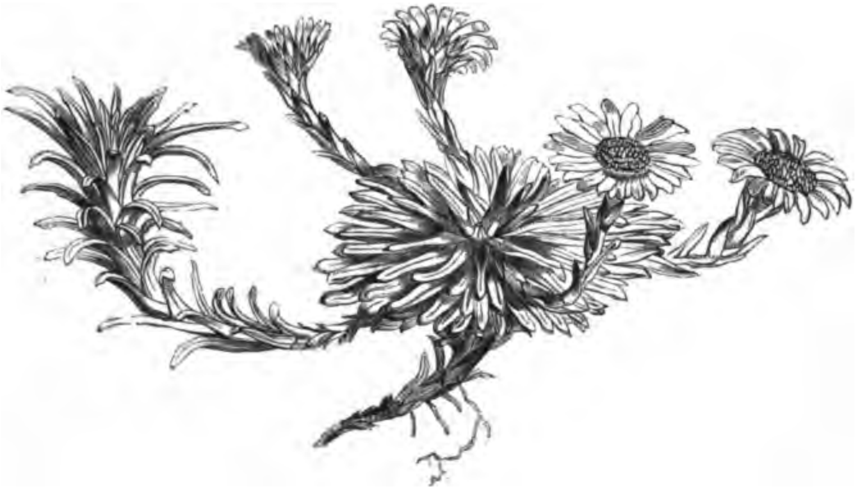
Epacris miniata, *Lindley* (vermilion Epacris).—Epacridaceæ § Epacreæ.—A small shrubby plant, of neat habit, with small rigid heart-shaped leaves, seated close to the stem, and very numerous axillary blossoms, produced along the vigorous young shoots; the blossoms are long, tubular, and of a fine light scarlet colour, tipped with pure white. It differs from the well-known *E. grandiflora*, chiefly in the colour of the flowers. It is a native of New Holland, and was raised by Messrs. Loddiges. Introduced about 1843. Flowers from March to June. *Culture.*—Requires a greenhouse; light, turfy peat soil; very careful watering at all times; propagated by young cuttings in sand, under bell-glasses, in a gentle heat. (40)

Bolbophyllum umbellatum, *Lindley* (umbel-flowered Bolbophyl).—Orchidaceæ § Malaxeæ-Dendrobidæ.—A small epiphytal plant, with a creeping root stock, which produces several oblong-ovate pseudo-bulbs, each bearing one oblong leathery leaf from the top; the flower then grows from the base of the pseudo-bulb, six or eight inches high, bearing at the top an umbel of cream-coloured flowers, spotted over with blood-colour; they are small and not very showy. A native of the mountains of northern India. Introduced in 1837. Flowers in August. *Culture.*—Requires a cool place in the stove; to be fixed on a block of wood; propagated by division of the plant. (41)

Doryanthes excelsa, *Correa* (tall Doryanthes).—Amaryllidaceæ § Agaveæ.—A bulbous or short-stemmed plant, with narrow lanceolate leaves, two feet long, from the centre of which springs a flower stem, from six to twenty feet high, terminated by a large bunch of flowers, which are tubular, with six reflexed segments, funnel-shaped, four to six inches long, and of an intense crimson colour. A native of various parts of Australia. Introduced in 1800. Flowers in August and September. *Culture.*—Requires a warm greenhouse: free loam, efficient drainage, and great care in watering, at all seasons; propagated by suckers or side branches when produced. (42)

Cyrtanthus carneus, *Lindley* (flesh-coloured Cyrtanth).—Amaryllidaceæ § Amaryllеæ.—A bulbous plant, with long strap-shaped blunt, evergreen leaves, and a bunch of flowers borne on the top of a naked stalk, a foot or more in height; the flowers grow about eight or nine on a stem, three inches long, narrow, pendulous, somewhat trumpet-shaped, of a delicate pink colour, paler at the base. A native of the Cape of Good Hope. Time of introduction uncertain. Flowering in August. *Culture.*—Requires a stove, free sandy soil, and to be kept growing all the winter, but very seldom watered; propagated by off-sets or seeds, but more generally by new importations.

Sternbergia colchiciflora, *Waldstein* (colchicum-flowered Sternbergia).—Amaryllidaceæ § Amaryllеæ.—A small bulbous plant, with narrow twisted leaves, and solitary clear yellow fragrant flowers on short stems; they are cut into six segments with a long tube. A native of Hungary and Tauris. Introduced in 1816. Flowers in September. *Culture.*—Hardy; sandy loam, and good drainage in winter; propagated by off-sets or seed.



CELMISIA VERNICOSA.

(*Dr. J. D. Hooker*).

THE VARNISHED CELMISIA.

This is a very beautiful plant from the Antarctic regions, which it is desirable should be speedily introduced to our collections: it is at present only known from the beautiful drawing published in the *Flora Antarctica*, to which source we are indebted for the illustration which accompanies these remarks.

The plant is not what is understood by a herbaceous plant, but it is an almost stemless one, with a dense tuft of rigid linear remotely serrated leaves, from among which proceed the ascending scapes (or flower stems), which are furnished with small linear lanceolate leaves (or bracts) throughout their length, and are each terminated by a solitary flower, nearly two inches in diameter, of very delicate tinting, white or faint rose, which forms a striking contrast to the dark purple of the eye or disc. The leaves which grow on some specimens in tufts nearly a span across, lie densely compacted, and spreading horizontally, radiating from the summit of the root, like the spokes of a wheel, and have a peculiar deep green, glossy, varnished appearance, shining like the surface of a shell, or as if covered with a thick coat of copal varnish. When in bloom, the plant must be an exceedingly gay one.

Like other of the Antarctic plants, the present varies considerably in size from that just described to a much more diminutive state, in which the tuft of leaves scarcely exceed an inch and a half in diameter. In cultivation, it will therefore probably be desirable to grow the specimens with tolerable freedom, or perhaps the larger form only should be introduced, as the variation in size may be perpetuated through succeeding generations.

It is found on Lord Auckland's group both on banks and rocky places near the summits of the hills, at an altitude of 1200 feet above the sea; and also near the sea on the exposed islets. Campbell's island also affords it, and it is there found in abundance in the immediate vicinity of the sea. This ought not to be overlooked in its artificial cultivation. The species ranks among Composite plants.

FORCING PLANTS FOR CUT FLOWERS.

THE great art of forcing is lost sight of by a majority of those who even profess forcing; we do not say by all, because there are some who know their business; but a vast majority are content to take plants that are well established in pots, and to gently move them on, and at last add heat and so on until they flower. These, however, are scarce, and a plant will be damaged a good deal by the cutting of the few flowers there may be, and they are then taken care of to get round again in condition for selling as plants, but the whole business is mistaken. Take established plants to begin with, but lose the first years' flowers; begin early, get them as forward as possible, and as the flowers come, or either as the buds come, the first season pick them off, and keep the plant growing till it has made fair wood. The roses will complete their growth as well as camellias, daphnes, or other plants adapted for supplying cut flowers. As this completion of the growth will be very much earlier than is usual, the next thing to mind is to keep them well watered, but as soon as it is completed, the plants should be removed to the coolest places, and be kept comparatively dry. Here they may remain to harden, and to be ready to start again early. Remove them into the house, and introduce fire heat very gradually. The plants, from their previous years' early work, and having become partly inured to early work, grow sooner and stronger than they did the first season. We ought to have observed that roses have to be pruned much the same as if they were in the open air, but the second season they bear three times as many flowers as they would have borne the first, and the same plants ought to be forced year after year, because they become used to the altered season; and if it be desired to make the flowers come very early, they have only to be taken into the house earlier every year till you have brought them into a regular habit of starting and growing early. The same plants shifted into larger pots from year to year, or as often as they require it, will continue to get better as they get older, and yield more flowers and better flowers with the growth, and most of them will come as natural three months earlier than the usual season, as the others do out of doors or under ordinary treatment. Camellias may be very well brought to flower regularly in October and November, instead of March and April. All we have to do is, to match as nearly as we can the season of rest, for it is the ripening of the wood that is the most important feature in the management; but in many plants it is quite practicable to reverse the season of flowers, and at no period was it ever more desirable than at present, when the demand for cut flowers is almost greater in winter than in summer. Nothing has been more common than to fancy that a year's rest should be given to plants that are forced. Nothing, however, can be more mistaken. Plants should continually be used to go to work early, and the more they are used to it, the better the flowers and the more of them.

NEW GARDEN FRUITS.

THE following notes on some new fruits which have recently been brought into notice, may be appropriately prefaced by the remark, that even yet, notwithstanding the many excellent varieties we possess, the qualities of some of those classes of fruit which are in cultivation admit of much further improvement by the same means which the florist adopts to improve, or rather mould to his fancy, the flowers which he specially prizes.

GRAPES.

Josling's St. Albans.—This is a white grape of great excellence, possessing the peculiarly rich musky flavour which characterises the muscats and frontignans. The bunches are very long, and tapering with strong diverging shoulders; and they are supported by a strong footstalk: the berries are round greenish-white, acquiring a tinge of golden yellow when well ripened, and about the size of those of the white Frontignan: the flesh is firmer than that of Frontignan grapes, but not so firm as that of the Muscat of Alexandria, very rich and sugary with a Frontignan flavour. The leaves are tolerably round in general outline, not deeply lobed, but sharply serrated, and remarkably glabrous on both surfaces. It was raised by Mr. Josling, nurseryman, of St. Albans, from seeds gathered promiscuously, and sown about six years ago; he supposes it to be a hybrid between the White Nice, and the White Muscat. Like these, it will require to be grown in a warm house.

Calabrian Raisin (Raisin de Calabre).—This is a late white grape; desirable as a contrast to the black St. Peter's—one of the best grapes known for keeping very late. The bunches are large, slightly shouldered, long and tapering; the berries are large, quite round and transparent; the flesh is moderately firm, with a rich sugary juice. The vine grows vigorously, is a good bearer, and has a disposition to form very large bunches. It is chiefly valuable as being a late grape, with the property of hanging long after it is ripe, and it will also keep for a considerable time after being cut, so that with good management it may be preserved for months in a fresh state fit for the dessert. A white grape of good quality, possessing this property of keeping well, was before a desideratum. It was obtained by the Horticultural Society of London, from the nursery of Messrs. Baumann, of Bolwyller, on the Upper Rhine.

NECTARINE.

Stanwick.—This variety of nectarine is remarkable from its having sweet kernels. It is well known that the kernels of these fruits and of peaches, partake of the qualities of the bitter almond, and even the flesh and luscious juice is not entirely free from this flavour of prussic acid. It was not indeed anticipated that this quality would ever be entirely removed. The Stanwick nectarine is like the Elruge in size and shape, but rather less heart-shaped at the base. Its skin is pale like the White nectarine—where shaded, with a violet tinge next the sun: the flesh is white, tender, juicy, rich, and sugary, without the slightest trace of the flavour of prussic acid. The stone is middle-sized, ovate, with a prominent sharp edge, very rugged, and of a chocolate colour: the kernel is sweet like a nut, with none of the bitter almond flavour. The tree is robust, growing late in autumn, and hitherto retaining its leaves through the winter: there is no doubt, however, that it will be found adapted to bear the usual treatment of wall-trees. The fruit ripens towards the end of September. It was raised from stones brought to England by Mr. Barker, formerly Her Majesty's Consul at Aleppo, and was raised in 1843, in the garden of Lord Prudhoe, at Stanwick Park, where it fruited in 1846.

PLUMS.

Jefferson.—This is an American variety of the highest excellence, fully equal, if not superior to the Green Gage. The fruit is large and roundish oval, with a stalk about an inch in length: the skin is dark yellow, remarkably speckled with purple and brownish red; the flesh is deep orange coloured, juicy, and exceedingly rich and sugary, &c., slightly adhering to the stone, which is middle-sized and elliptic. It ripens about the third week in September, or probably in the generality of seasons a little earlier. The fruit has the property of hanging a considerable time on the tree after being ripe. The tree is a great bearer as a standard, with smooth, or very slightly downy upright shoots, and middle-sized elliptic, serrated, or acutely crenated leaves, glabrous on the upper surface. It was raised by the late Judge Buel, at Albany.

Reine Claude de Bavey.—This is a variety of the Green Gage, nearly double in size, ripening ten days or a fortnight later, and possessing the good qualities of that esteemed variety. It ripens generally about the end of September. Raised from seed by M. Esperin de Malines.

Guthrie's Apricot.—A yellow plum, ripening about the end of September. Raised by Mr. Guthrie, of Dundee.

PEAR.

Cholwell.—A good early pear; succeeds well as a standard. The fruit is about three inches long, and nearly two inches in diameter at the widest part, curved pyramidal, with a small open eye, and a slender obliquely attached stalk. The skin is smooth, thin, yellowish green where shaded, faintly tinged, and obscurely streaked with dull red next the sun, where it is also sprinkled with pale dots: the flesh is yellowish white, melting, buttery, very sugary and rich, with a musky flavour. It ripens at the end of September and beginning of October. It was received by the Horticultural Society from Dr. Soper, of Ashburton.

APPLES.

Burton's Seedling.—This apple somewhat resembles a very fine Mank's Codlin, when grown in the shade, being of a deep cream colour, the fruit looking as if varnished. It is of good size, and a great bearer; the flesh is rather soft, but of fine flavour.

Pine-apple, White's.—A seedling from the old Golden Pippin, which it resembles in shape, but is larger; the skin is a rich orange yellow, partially russeted; the flesh yellow, very rich, and sugary. It is an excellent dessert apple, in season from December till February. The tree is a good bearer.

Pitmaston Golden Pippin.—This is a seedling from the Golden Pippin, which it a good deal resembles, being a good dessert fruit, of firm flesh, and rich saccharine flavour, more sugary, but not so juicy as the old Golden Pippin. The tree is vigorous and bears well.

Stoke Park Pippin.—This is probably a seedling from the Golden Pippin, as it much resembles it in general qualities. It is a good dessert fruit, sugary, and firm. The tree bears well, but is liable to canker.

RASPBERRY.

Scalter's Magnum Bonum.—A white fruited variety, of very large size, combined with a fine flavour. The plant is of strong robust habit, and very prolific.

STRAWBERRY.

Bicton.—This is a fine late white strawberry, raised at Bicton, in Devonshire. It is an abundant bearer, and though not very highly flavoured, will prove useful from its coming late into bearing when most other kinds are past. It belongs to the class of Chili strawberries. The fruit is of moderate size, whitish in colour, and of somewhat flattened oblong figure.

The Calceolaria.

GLENNY ON THE CALCEOLARIA;

ITS VARIETIES AND CULTURE.

SOME species of the Calceolaria have been cultivated for years in the English gardens, but their elevation to the dignity of a florist's flower is of comparatively recent date. Messrs. Young and Penny have the doubtful credit of making the first move in hybridizing some of opposite characters; and Mr. Groom made early progress in collecting and selling some of the most remarkable. It is most likely that the work of hybridizing, as it is called, was going on simultaneously in several places, for there were many very singular, and, looking as we always do at the habit of plants, we may say beautiful varieties, offered about the same period, retaining all the shrubby properties, and possessing many brilliant colours. Perhaps the worst thing that ever occurred in the progress of this plant towards perfection, was the awarding of prizes to herbaceous varieties, as well as shrubby kinds; for it induced people to grow both, and led to a degeneration of both. We have always maintained that the shrubby ones only deserve the distinction of florists' flowers; and it is now difficult to find, even among those honoured with prizes, anything like a good habit of plant. The herbaceous varieties give us the largest flowers; and the captivation of size with people who do not study all the properties of plants, led too many to encourage the herbaceous kinds for that property only. Mr. Green, gardener to Sir Edmund Antrobus, was the first and most successful exhibitor of this elegant subject; and the enormous flowers on some of his herbaceous varieties, completely rivetted the attention of those whose taste, or want of taste, induced them to value flowers by measure. Mr. Green, so far as our observations went, was as completely in advance with calceolarias, as Mr. Thompson of Iver was with pansies; and a spirit of emulation led others to buy his best sorts, and set to work with seedlings themselves. It is well known in the floricultural world, that our standard of excellence is a perfectly round flower, on a completely shrubby plant; and the novelties are now principally estimated by that standard, though there is much to do before it can be obtained, even should it ever be accomplished. Still, as herbaceous varieties, and the plants partaking of that habit, afford the largest blooms, it is difficult to make many judges pay sufficient attention to the superior merit of shrubby plants. The colours and the markings of the calceolaria are becoming exceedingly numerous; and, within the last two years, they have been diverted from their general characteristic in an extraordinary manner, and from speckles and blotches of all forms and sizes, they have produced blossoms with stripes like a carnation, ramifying from the hollow which is at the top, like rays from a centre, to the outer edge. The chief blemishes of these have been a dulness and indefiniteness in their colours and stripes. Nevertheless, there is no doubt, like all other subjects taken up in earnest, they will be improved; they have, too, the prevailing fault of deep notches in the outline. The herbaceous kinds are what florists technically call "miffy," a term denoting easily killed or damaged by mismanagement. The shrubby ones are more hardy and easily managed. We succeeded well for some years by the following treatment.

SOIL.

The compost we used was clean hazel loam, which, when ordinarily damp, but not wet, we could squeeze into a mass, and lay it down on the potting table without breaking, but which a pressure of the finger would crumble again readily. To two parts of this, we put one of leaf mould, one of mould formed by a rotten melon bed of stable dung, and one of Wimbledon peat—this being merely lumps of half-decomposed wiry fibre and sandy earth, was rubbed through a coarse sieve, such as would let horse beans through. The loam, and dung, and leaf mould were sifted through the same sieve, and the whole well amalgamated, and often turned for some time. It should be mentioned, perhaps, that all these should be measured after they have been passed through the sieve, for one of them may have, and the peat especially, a good deal left behind, which would, of course, considerably affect the proportions. This soil is not too retentive of moisture; and then requires that all plants grown in it should be very carefully watched and watered. When the soil is required for repotting large plants, or to grow them with very large shifts from small to large pots, the sieve used may be coarser, large enough in the mesh to let a marble through. Some cultivators were using at the same time, and with equal success, three instead of two parts of loam; but very much depends on the quality of the loam, which, if heavier or of a more tenacious nature than we have described, should be rather lessened in quantity.

CHOICE OF PLANTS.

As there is no method of choosing plants equal to that of selecting those in bloom, the following points should be attended to as much as possible. First, that the plant be of shrubby habit, the stems being woody and well clothed with foliage, branching well, and forming a bushy shrub on a small scale. Secondly, that the flower stems should not rise too high above the foliage, for it would be desirable that no bare stalks should be seen between the leafy shrub and the flowers. Thirdly, that the flowers should have footstalks of such length as to display the bloom to advantage, without being crowded or too far apart. Fourthly, that the flowers should be smooth and full, like a small distended bladder, not flattened, nor indented like a melon, perfectly round in the outline whichever way it is viewed. Fifthly, that the colours should be bright or dense, which gives richness; that any marks or blotches should be well defined, and the ground colour as good at the back as the front. Sixthly, that so far as is consistent with these points, the largest flowers should be chosen. But with regard to the roundness and the freedom from indenture, so large a majority of the present varieties are deficient in these respects, that all we can do is to pick those which are the most round and the least indented, and be satisfied with those that are the nearest to the standard we require. This selection should be made without regard to names or price, for, like the varieties of many other subjects, the dearest are not by any means always the best. If, however, we desire plants before they bloom, the only points we can choose are those which relate to the habit of the plant, which, if handsome when small, will rarely grow worse as it increases in size. We may consult the last published authority for the best names, or take the recommendation of a respectable florist, (and we ought never to deal with any other,) for the number we require, first letting him perfectly understand the points we wish to secure. Nor must we be disappointed if the collection contain some which approach our standard at a very humble distance. The *Garden Almanac* for 1847, gives us a list of the best new ones: — Masterpiece, Puissant, Julia, Emperor, Oscar, Lord Hardinge, Marmion, Marquetry, Matchless, Orlando, and Plant's

Carnation stripes, and there is no doubt they are the best exhibited; but some of them are mentioned for their colour, some for their habits, some for their form, and some for their novelty. There are older ones which equal them, such as the Mr. Kinghorn's best half dozen, and Mr. Standish's best three or four, which may be had, as well by that distinction, as by their names. These plants, obtained early in spring, will be best retained in their pots until their fibres reach the side; or if, on examining them, their balls are at all full of roots, they should be at once shifted.

REPOTTING OR SHIFTING.

Procure pots one or two sizes larger than those the plants are in; for instance, if they are in the pots called large sixties, they may be shifted either to the size called forty-eights, or the next size, called thirty-twos. We, for the sake of their taking less room, prefer only one size larger, and should use forty-eights. Give the new pot some broken potsherds or crocks at the bottom, say an inch or an inch and a half deep; then put enough compost in the pot to bring the ball even with the top of the pot without pressing. If the roots have grown about the crocks in the original pot, do not disturb them to hurt the roots; but when the ball is turned out, rub off the soil from the top surface a little, but not enough to disturb the fibres; then set it in the centre of the pot into which it is to be placed, press it down a little into the soil already there, so that the collar of the plant is just below the level of the top edge of the pot; with the hand fill up the vacancy all round, shaking it gently down, by knocking the bottom of the pot down on the potting table or bench, and, if necessary, gently pressing it down at the sides, by a piece of stick of a proper thickness, not to touch the fibres which are round the outside of the ball; then, placing a little of the compost on the top, which should be about as high as the edge of the pot, finishes the operation.

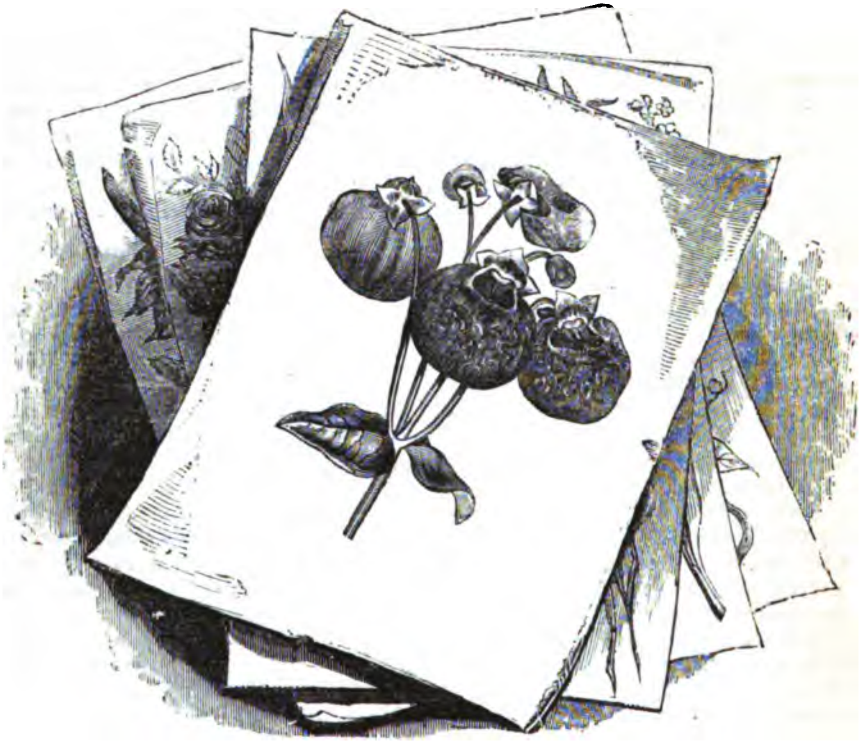
The plant should be placed in a cold pit, or even a common garden frame, on a dry bottom, impervious to wet, so that the water that runs through the pots will not soak into the ground, but run off altogether; and they should be covered with the lights close for two or three days, being first watered gently, but thoroughly, to settle the earth to the roots. If the frame be like those for the culture of ordinary melons and cucumbers, only one board thick, it will be as well to heap up earth all round, like a bank, providing, however, by some means, for the running off of the superabundant water; and the greatest care must be taken to cover them from frost and cold winds, with matting or transparent cloth; for the plant, though half-hardy, will be easily damaged with frost, if in a growing state, and cannot be too carefully guarded against it, although it requires no heat. Many who have a greenhouse, place them on some of the shelves, in preference to growing them in pits; but, where there is so much space, there is more danger of frost, unless artificial heat be given in hard weather; and the Calceolaria does not thrive so well, nor grow so handsome in heat; they are apt to draw, and it is the very last plant that should be at all drawn, on account of its spoiling the habit and appearance, and weakening the flower stems. It is necessary to keep them near the glass, and it is almost impossible to have them too near. Besides, plants in frames or pits are so well under the eye, and we can so much better see when they require water.

WATERING AND GIVING AIR.

Although the Calceolaria is, with care, among the easiest-managed subjects, that care must not be withheld, for it is the most liable to damage by the least neglect. Too much water will damp them off quickly; too little will destroy them, or hand them over to the red spider, which almost instantaneously attacks an unhealthy plant. The compost should never become dry, and, except when the plants are growing rapidly, not too often watered; there is never, or at any rate, there is rarely, sufficient attention paid to this important operation. It is almost destructive to omit watering one hour longer than the time they ought to have it. In mild weather the lights should be taken off; and this is the time when, if the weather be dry, the moisture rapidly passes off, and requires renewal. On the other hand, in cloudy or dull, though mild weather, the moisture may be retained for a long time. It should never be thought too much trouble to turn out a plant, to examine the state of the soil and the roots. The greatest danger of suffering from wet is in the winter and early spring months. The greatest danger of suffering from want of water is after the spring growth commences in earnest, and the flower stems begin their work; for the plant takes up a good deal of moisture, and the roots get near the side of the pot. If the weather be very foggy or damp, the frames are better covered up with the glasses quite close, but not darkened with mats or cloths, unless there is frost, or danger of it. The frames should not be opened in windy weather, unless the air be mild. In the spring months, if there be a genial shower, the lights may be removed, that the plants may have the benefit of it. One precaution is very necessary in the application of water; it always ought to be of fully equal temperature with the atmosphere; and, if it be not so naturally, which is seldom the case, unless it be exposed to the sun in shallow vessels, it ought to be made so by putting a little warm water into the waterpot, so as to raise the temperature a little. Water kept in a heated house would do; but there is no way so simple as to put a little heated water to the quantity you are using. Many plants suffer greatly from the chill given by pump and other cold water, when they are sending forth their young growth.

SHADING.

As the warm days advance, the full power of the sun would be injurious to the plants, and rapidly dry up and heat the soil in the pots. To prevent this, a thin or transparent cloth should be used, that will not exclude the light, but yet keep off the power of the sun; as the plants however want air, the glasses should be propped up at all four corners with blocks of wood, or bricks, or flower-pots, or some other contrivance which will allow the air to pass freely over all the plants; and the shading is only to be continued in the strongest heat of the day. At morning and evening, when the power is not great, they may have the benefit of it with the glasses off, until the period when the colour of the flowers begins to show, when they must be still more carefully protected against sun.



TREATMENT TO THE TIME OF BLOOMING.

In the spring, when the plants begin to grow the pots rapidly fill with roots, and it will be necessary to examine them, by turning out the balls of two or three occasionally, to see how far they may require shifting to larger pots, from 48's to 32's. The operation has to be performed in a manner precisely similar to that of the first shift from 60's to 48's, and they must be treated in all respects the same. In a comparatively short time even these will be filled with roots; if the plants, from their size, require one shift more, the state of the roots must be examined as before recommended, and the shifting will be just the same as well as the treatment afterwards. As the stems rise for bloom they may require support, but proper habited plants will not, unless they are drawn up. If, however, for the purpose of travelling or for exhibition tying up becomes necessary, it should be done with very slight twigs of osier, with the bark on, and as soon as the flowers begin to swell and take their places in their bunches: the twig should reach above the flowers and be tied loosely, for the stems would grow, and if confined, would be bent, unless the tie were loose enough to slip up with the growth. As the blooms develope themselves, it is the fashion to put the plants in a house, but shading and plenty of air must be attended to as usual, and plenty of water must be given. According to the size of the plants, so must the pots be increased in size as fast as the roots fill up the old ones; and a continuance of watering, giving air, and shading, will bring them to perfection.

SEEDS AND SEEDLINGS.

The plants destined for seeding should be placed together in the open ground, or in a pit which can be altogether uncovered when necessary. If it be intended to fertilize one particular kind with another, take a camel's hair pencil, to collect the dust of the one, and brush the pistil of the other with the camel's hair pencil, and the dust will stick to the female organ of the plant; but it is far better to place such as are considered good together in one place, and let them fertilize themselves. Cover them against excessive rains, because they are unfavourable to the seeding of anything, but in an ordinary season they will seed plentifully; and all that is necessary is to place none for seed that have not any distinct characters, and very desirable ones, so that any kind of mixture may bring two good properties together in one flower, which are at the beginning in two separate ones. The seed must be gathered carefully as it approaches ripeness, and the pods be placed in a paper under cover, where it will not be prematurely laid by in a damp or unripe state. It is better to gather it before it actually turns brown, because it ripens as well for a week on the stems cut off, when once it is full grown, as it would on the plant. When once dried well it may be sowed in pans or boxes or large-mouthed pots, thinly and evenly, and be placed in the greenhouse, or in the pit, and covered with a bell glass until it comes up; providing at all times for sufficient moisture to prevent the seed from drying again after having swelled. It should also be shaded from the heat of the sun. Upon the whole, the seed, when sown, would be better in a greenhouse, covered however, with a hand or bell glass, and kept merely a little moistened by watering with a very fine rose or a patent syringe, for the water should fall in very fine particles like dew, as the seed would be displaced by it. When the seeds come up they should be carefully shaded, and the glass should be taken off by day, and put on again at night. A simple and effective shade is to merely cover the side of the glass next the sun with a piece of paper; it keeps off the bright and burning heat without materially affecting the light. When the plants fairly set off growing, the bell or hand glass may be removed altogether; and as soon as the plants are large enough to handle, they may be pricked out, in wide-mouthed pots, an inch apart, beginning a row close to the edge and working inwards; a pot will hold a good many plants this way. After a very gentle watering with a fine rose or syringe, they should be covered with a glass and placed within sight near the window in the greenhouse, or in the pit; the glass must be kept over them till they have fairly established themselves, when it may be taken off, and they may grow until they pretty well touch each other. When they have become strong, and the foliage nearly covers the pot, they may be placed one each in the large sixty size pots, and be set in a frame, and after watering them, to settle the compost about their roots, they may be shut up close for a day or two; they must be now shaded from the violent heat of the sun for a while, but when they have once got hold again, and established their roots, all the care required is to see they are well and frequently watered in hot weather. They will show their habits very early, and if we were growing them we should throw away all that showed they were herbaceous, for to say the truth, we do not value them more than we should a single pink or a double polyanthus. If the pots fill with roots towards the winter time, the changing to larger ones had better be deferred to the period at which they begin to grow again, as they can hardly be kept better than at rest during the severe weather—if there be any. As the early spring approaches, they may be all shifted into 48 sized pots; or if there are more than can be conveniently grown in pots, they may be held back, or a portion of the least promising habits may be held back, to bed out or put in the borders. The treatment, in short, of the seedling plants when once they have been raised, up to the filling of the small pots, may be assimilated to that already given for other plants.

SELECTING FROM SEEDLINGS.

We cannot do better than refer the reader back to the instructions for the choice of plants when in flower; for as he would pick from the stock of others for his own garden, so ought he to select from the stock of seedlings such as are worth cultivation, and throw or give all the rest away. Indeed, as the flowers come out, all that are good for nothing should be cast out the instant they are discovered, that they may not spoil the seed of the better ones by inoculation.

TREATMENT OF PLANTS AFTER BLOOM.

The branches should be cut back a little into form, the useless or thin wiry shoots cut out, the plants cleansed, the top surface of the compost stirred and thrown out, and a fresh top-dressing put on. They may then stand in their frames, receiving pretty nearly all the weather, except the most violent of the rains and east winds, until September, when they must be deprived of more wet than is absolutely necessary, and be secured against frost. As the plants enlarge, they will require other pots, but they may enjoy a period of comparative rest from the end of October till they make a fresh move in the early spring; however, plants of good shrubby habits do not actually stop growing at all. Before they are shut up for the winter, the surface should be stirred, the loose mould shook off, and the pots filled up level; they will scarcely want watering all the winter, unless it be unusually bright and warm.

SPRING SHIFTING.

The established plants and seedlings alike require to be removed to larger pots as soon as there are any symptoms of making new growth, that is, presuming the pots are full of fibres, or at least that these have reached the side. The sized pots in which they are to be placed must depend on the size they are removed from; from 60's to 48's, from 48's to 32's, from 32's to 24's, from 24's to 16's, and 16's to 12's, which is large enough to carry a very handsome well-grown specimen. The mode of shifting has been described.

CUTTINGS.

In going over all the plants, to see that there are no useless shoots left on, many will be found that may be removed, by merely breaking them off from the base; very small ones will answer all the purposes of propagation. Those who require many will grow a few plants pretty hard after blooming, to induce shoots on purpose to take off, but any small pieces will strike readily in the ordinary compost, with a quarter of an inch of silver sand at top. The cuttings must be put in so as to touch the compost, but not to go into it, and the sand will always protect them from the air by working down close every time it is watered. They should be covered with a bell-glass, that touches all round the inside of the edge of the pot; but, as most cuttings strike more readily when placed close round the edge, so as to touch the pot, it is better to fill a pot with cuttings all round the edge, and to place this pot inside another, with a good inch of room all round; the bell-glass resting upon the soil, which must be filled in between the two pots. The object of the glass is to exclude drafts of air, and prevent evaporation from taking place too rapidly. A slight bottom heat will facilitate the striking, but the glass must be wiped dry inside every day, and the soil kept moist, for if once the cuttings become dry, they would stand a poor chance of recovering. In a few weeks the cuttings will begin to grow, which is a pretty safe indication of their having struck, and when they have acquired some strength of root, they may be potted off carefully, one in each pot, which may be the smallest or thumb pot, or the first recognised size called 60's. They should be closed up in a frame a day or two, and then submitted to the treatment already described for plants brought in, which, with some varieties, are rarely more than a struck cutting in its first separate pot.

The following hints refer to the general features of the cultivation of the Calceolaria, during the year:—

January.—The plants should now be in pits, which can be well protected against frost, but not heated artificially. They should have little or no water, nor should they be uncovered during a frost. If the weather be mild and damp, let them have all the air they can get, by uncovering them altogether; if, on the contrary, there be wind, they must only have air given by propping the lights on the side or end, on the fair weather side. Generally speaking, the plants should have as little water during the winter months as can be given to keep them from quite flagging. Towards the end of the month the plants will begin to grow. Watch closely for green fly, and upon the slightest indication of its presence, fumigate with tobacco or tobacco paper.

February.—This month the surface of all the soil in the pots that are large enough, may be stirred as low as it can be done without disturbing the fibres, and thrown out to make room for a top-dressing of leaf-mould and cow-dung perfectly decomposed; with this top-dressing, towards the end of the month, and a gentle watering, if well covered up for a day, the plants will set off growing; and when there is no frost or cold winds, let the glasses be quite off. Cover up carefully at night, and also in cold weather. Seeds may be sown.

March.—Continue the treatment of last month. Propagate by cuttings when they can be taken; they ought to consist of the young shoots when two inches long. All the plants which are in pots that are filled with roots and require shifting, should be carefully turned out and put from 60's to 48's, from 48's to 32's, or 24's, and from this to 16's, carefully keeping the surface of the soil close, but not above the collar of the plant: after shifting, they must be watered and shut up one day. Look out still for green fly, and destroy them before they can get a head. Sow seed in wide-mouthed pots; scatter it very thinly. Pot off the seedling plants.

April.—Give plenty of air and pay great attention to watering. Propagate by cuttings. As we do not encourage herbaceous varieties, we are almost unwilling to give a hint about them; but as they soon throw up thin, long awkward flower stems, they must be supported in time by sticks, which should be small, and the ties must be rather loose, to allow the growing stem to push the tie up with it. The plants now require a good deal of water, as the weather becomes warm; gentle showers are good for them.

May.—Propagate by cuttings still, when any nice young shoots can be taken off without spoiling the plants; as they continue growing and advancing for bloom, they are more in want of moisture, and should never be allowed to get dry; they also require all the air that can be given; they may be removed to the greenhouse, either for ornament or convenience, but until they become large, the pits are more handy. Supporting the stems will be found necessary with some varieties, but the good shrubby kinds will not require it except for travelling. Encourage seedling plants. Look closely after the green fly. Bed out at the end of the month, small plants for the open air.

June.—Most of the well grown plants will now be flowering; they will still require plenty of moisture, and the sun must be kept off with thin canvass shading. In pits the lights should be tilted on all four corners, and the canvass thrown over them in the heat of the day; and if they are in the green-house, there must be some kind of shade or the blooms will soon fall or fade. Cuttings that are struck, may be potted off, and the sooner the better. Prick out seedlings an inch apart in pots, beginning round the edge. Watch the green fly, for if left undisturbed for a few days they would destroy the beauty of a plant.

July.—Cuttings may be still potted off, and any that have filled their small pots with roots may be shifted to others a size larger. The principal business now is to shade the blooming plants, keep them well watered and drained, and supported where it is necessary. Seedlings that are up and growing in their seed-pots may be pricked out, an inch apart, as soon as they are large enough, in wide-mouthed pots, or if in small pots put round the edge only. Shift any that are in pots too small. Put together, in an isolated place, for seeding such distinct varieties as you wish to amalgamate.

August.—Propagate, by cuttings, all this month. Water freely. Remove such as are past their prime into the open air, to encourage the seeds, and be careful that they do not suffer for want of water. Seed, also, must be examined as it approaches ripeness, and be gathered before it is scattered. Shift seedlings that are large enough into small pots, one in a pot, and after watering them in, to close the earth about their roots, shut them up a day in a pit well shaded. Continue to watch for the green fly, and exterminate it with fumigation.

September.—Propagate by cuttings all this month, attending to their different stages, as before. Continue to gather seed. Pot off seedlings and cuttings that are ready, and shift those that are pot-bound. Cut down the bloom stems; stir the surface of the mould in the pots; top-dress a little, and set them in their frames for the winter. See that the bottom of the frame is hard and sound, and rather sloping, so as not to let water lay on it, nor soak into it. Lessen the quantity of moisture given to the plants, as they will not be growing much, and there is, after the middle of the month, danger of frost.

October.—Continue the treatment of the past month, but be more careful, and provide against frost, by covering at night. Pot off any of the best or previous month's cuttings that have struck, and shut them down close for a day or two after moving. Also, pot off seedlings, or prick out the small ones, and place them in the greenhouse until they are large enough to put in separate pots. Give no water now, while the plants keep fresh, for there is very little moisture wanted.

November. — The treatment throughout the autumn and winter months is not materially changed:—all the air that can be given in mild weather, very little moisture, and secure covering from frost; and whether they are in regular pits or frames, or in a greenhouse, the same treatment must be observed as nearly as possible; nor must it be forgotten, that frost does not prevent the green-fly from attacking these plants, although there is less danger of them in winter time than in spring and summer.

December.—A continuation of more watchfulness, to carry out the general principles already laid down. The inside of the pits should be kept dry and clean; all dead leaves should be constantly picked off and thrown away, and by no means be left in the pit. Water should be seldom given, and never until the soil is nearly dry.

THE KINDS TO SELECT.

A very minute description of each separate variety would have a great degree of sameness; for the variety is occasioned by the different shapes of the spots as much as anything. We therefore give a list of the sorts we should buy to begin with, and should then be content to take in addition any that appeared better in blooming time, but none that were worse:—

Lady Anne Charteris, Professor Wilson, Duchess of Sutherland, Kinghornii, Lady Blantyre, Celebration, Lady Constable, Standishii, Masterpiece, Puissant, Julia, Emperor, Oscar, Lord Hardinge, Marmion, Marquetry, Matchless, Orlando, and Plant's Carnation

Stripes; which last is a singular strain, entirely run away from all the others.

THE PROPERTIES OF THE CALCEOLARIA.

The plant should be shrubby; the habit bushy; the wood strong; the foliage thick and dark green.

The flower-stem should be short and strong; and the footstalks of the blooms elastic, and branching well away from each other, to form a rich mass of flowers, without crowding. The individual flower depends entirely on the form of the purse; it should be a perfect round hollow ball; the orifice and calyx cannot be too small, nor the flower too large.

The colour should be very dense; whether the marking be a spot in the middle, or stripes, or blotches, it should be well defined; the ground should be all one colour, whether white, straw, sulphur, yellow, or any other colour.

The colour of a self should be brilliant, and all over of the same actual shade; dark flowers with pale edges, or clouded and indefinite colours, are bad and unfit for show.

The bloom should form one handsome bunch of pendent flowers, commencing where the foliage leaves off; the flower-stems should not be seen between the foliage and the flowers, which latter should hang gracefully, and be close to each other; the branches of the flower-stems holding them so as to form a handsome spreading surface.

We cannot well give the properties of this flower without acknowledging that Mr. Green has written on the same subject. We are not surprised that we differ from him upon the most essential points. This comes of our wanting flowers better than they have been yet produced; and of growers taking their own best for a model, and making, or rather endeavouring to make them patterns for all future growers. There is no good reason why the Calceolaria should not be as round as a cherry. The error which most people fall into in settling the points of a florist's flower is, that they are guided by what has been done, instead of what would look the most handsome if it could be accomplished.

MR. GREEN'S PROPERTIES.

The properties which constitute perfection in the Calceolaria, consist in the lip forming a perfect circle, even round the edges, not flat, but raised in the centre, presenting a bold convex surface.

In all cases the colours should be clear and distinct, with the dark markings having a rich velvety appearance; the petals and calyx ought to be large and full, with the flower-stems short and strong.

The shrubby kinds are much the best; the flowers are quite as large and as beautiful as the herbaceous sorts; and they are much easier of cultivation.

THE KITCHEN GARDEN.

Sow artichoke, asparagus, angelica, anise, basil, beans, beet, borecole, borage, Brussels sprouts, brocoli, burnet, cabbage, caraway, carrot, cauliflower, celery, chervil, clary, coriander, cumin, cress, dill, fennel, fever-few, horehound, kidney-bean, leek, lettuce, love-apple, marjoram, Milan cabbage, mustard, New Zealand spinach, nasturtium, onion, parsley, parsnip, peas, potatoes, purslane, radish, rampion, rape, rhubarb, savoy, salsafy, scorzonera, seakale, skirret, spinach, and turnip.

Plant and Transplant artichoke, asparagus, balm, burnet, cabbage, cauliflower, chamomile, chives, fennel, garlic, horse-radish, lettuce, hyssop, mint, potatoes, peppermint, sage, shallot, sorrel, thyme, and wormwood.

General Directions.—The above lists and the dryness of the soil will alike indicate that the busy season is at hand, and of course show the necessity of the utmost activity. This month is also a good time to mark where drains are most required, by observing the indication of wetness, as shown by the damp places being slow in drying, which, if to be done this season, must be done immediately. Hoe in every part; complete the general digging, trenching, making of edgings, &c.

Artichokes (*Globe*).—Prick out those sown last month, and still keep them in a gentle heat. Make new plantations of suckers from the old stools; plant them at four feet between the rows, and two feet apart, in an open, deep, rich, and moist soil, watering until they take root, if the weather is dry. Thin out the old stools to three of the strongest shoots: dig in neatly the material with which they were protected, and add a little sea-weed, as manure, if at hand.

Artichokes (*Jerusalem*). — Plant upon trenched or deeply dug ground, at three feet apart and one foot in the row, in a light rich soil. The smaller roots may be planted whole.

Asparagus.—Sow on a rich soil about the middle of the month, in drills two inches deep and fifteen apart. New plantations can still be made, but many prefer May and June. Loosen and dress the surface of the old beds, working in two inches of good rotten dung or seaweed with the points of the digging fork, which should be inserted in a slanting direction, and raking the hard clods and stones into the alleys. In showery weather sow common salt over the beds.

Angelica.—If not sown in autumn, should be done now; transplant young plants into a moist soil, three feet apart.

Anise.—Sow in a light dry soil in the warmest part of the garden, say along the bottom of the south wall.

Balm.—Plant in common garden mould, one foot apart; it is increased by division of the roots.

Basil, which was early sown, should be pricked off in pots or boxes into a light rich soil, and kept in a gentle heat: make another sowing in heat at the end of the month.

Beans.—Earth up the advancing crops, and if any were sown thickly and raised in heat they may now be planted out: plant a main crop at the end of the month.

Beet.—Sow the main crops upon a deep, rich, and sandy soil, in drills fifteen inches apart, and one inch deep, about the end of the month.

Borecole.—Under this head are included all the kinds of kale. Sow at the end of the month: those which proved to be fine curled sorts transplant to a good situation to be preserved for seeds.

Borage is usually self-sown, but if not thus to be depended on, scatter a few seeds in any spare corner; when in flower, it is valuable for bees.

Brocoli.—Sow early for autumn crops; the purple sprouting and Snow's early white are suitable. The main crops may be sown at the end of the month. Protect the seeds from birds, by netting or branches, and the young plants from cutting winds. Go over the old plantations regularly, and cut the heads before they begin to open, taking care, when they are wanted to be kept for a few days, to cut them six or eight inches below the flower, which makes it easy to preserve them: remove the roots of those cut, totally from the ground.

Brussels Sprouts.—Preserve some of the plants which prove to be superior for seed: sow at the end of the month, in a good rich soil.

Burnet.—Sow a little in a shady situation; or increase it by division of the roots, and plant nine inches apart.

Cabbages, for use in summer, must be sown early; keep each kind distinct. Plant out the autumn sowings, the dwarf sorts about fifteen inches apart; it is a good plan to make drills with the hoe, in which to plant them, and draw the earth to that side from which the cutting winds proceed.

Caraway.—Sow a little at the end of the month; the young leaves are used in soups.

Carrots.—Thin out partially the early sowings, as many will soon be drawn for use. Sow in the beginning of the month on a warm border; the main crops defer until the end. Have the ground thoroughly wrought: the soil should be deep, rich, and of a sandy nature; choose a calm day for sowing; the seed is usually rubbed amongst sand to separate it, but this is not imperative; sow in drills fifteen inches apart, and trample or roll in the seed.

Cauliflower.—If no spring sowing has yet been made, do it immediately (in a slight heat), to succeed the autumn sowings: prick out the early plants, and forward them under glass. The wintered plants should be put out at the end of the month: thin out those under hand-lights to two or three plants; air profusely: should the weather be unfavourable, defer planting out. Those which are in pots, and appear to be confined, may be shifted into a larger size, and kept growing, otherwise they are apt to button.

Celery.—Sow early in a slight hot-bed; cover very slightly: prick out into another frame when about two inches high; give air freely. Use a rich soil in all stages of growth.

Chamomile.—This useful medicinal plant is easily increased by division or cuttings; they will grow readily in any common soil.

Chervil.—Sow a little in any spare corner; it requires to be sown monthly for succession.

Chives.—Plant in any common soil; increase by division of the roots: plant it as an edging or in a bed, a few inches apart: it is very useful for spring salads.

Clary.—Sow in a bed, if not done last month, in any common mould; it is not much used.

Coriander.—If not sown last month, may be got in now; give it rather a good situation and a fresh soil.

Cumin.—Sow a small bed in any open situation; it is not much used.

Cress.—Sow towards the end, in an open border; the early sowing will be much assisted by being protected with hand glasses; grow it as quickly as possible; double the quantity of cress, compared with mustard, will be found proportionate.

Dill is best sown in autumn, but may now succeed very well; sow a small quantity in a light soil.

Fennel.—Sow early in shallow drills, from six to ten inches apart; a few plants will be found sufficient; thin them to sixteen inches apart: or increase by division.

Feverfew.—Sow in a light soil, and transplant to a foot apart; in addition to its medicinal qualities, it makes a showy border flower.

Garlic may still be planted in drills two inches deep, ten apart, and six between the roots: hoe the autumn planting.

Herbs generally may be sown, and increased by division of the roots this month: it is in many respects desirable that a piece of ground be exclusively devoted to them.

Horehound.—Sow at the end, in a dry situation, either in beds or drills, a foot apart and an inch deep.

Horse-radish.—Plantations may still be formed; and as the ground is levelled, a sowing of radish, lettuce, or cress may be made.

Hyssop.—Sow on a border in a light mould, covering slightly; it may also be increased now by division of the roots, by cuttings, or by slips.

Kidney-beans.—Although no dung need be used for this crop, the soil must be rich and well wrought, also dry ; a few may be planted at the end of the month in a very warm spot.

Lavender—Increase by cuttings and slips ; the common garden soil will suit it.

Leeks.—Sow any time this month, give them an open spot, and a deep rich soil.

Lettuce.—Sow at the end, on a well-worked piece of ground; the seed may be trodden in if the soil is dry. Plant out a few by the side of the wall from those under glass, and give air freely to those in frames.

Love Apples.—Sow a little in a pan, in a slight heat, at the end of the month.

Marjoram.—The perennial sorts may be increased by division, if required ; prick off the annuals sown last month and forward in a slight heat.

Milan Cabbage.—Sow at the end of this month, on a warm spot, on a dry and light soil for transplanting.

Mint.—Divide the roots, planting them in drills, a foot a part; any common place will suit it. It should be replanted often.

Mustard must be sown twice for once of cress : it may be sown on a warm border externally ; if frosted, sprinkle it with water, and keep it shaded from the sun.

New Zealand Spinach.—Sow in a slight heat, near the end of the month, and afterwards pot them, to be ready to plant out in April.

Nasturtiums.—Sow at the end of the month, in heat, and plant out next month, in a situation where beauty and utility may be combined. They make good temporary fences.

Onions.—The soil can scarcely be too rich: a successful mode of dunging is, to have the ground levelled, and then spread the dung, covering it very slightly with soil. Main crops should be put in by the end of the month; sow in drills a foot apart, and one inch deep, and trample it in if the soil is sufficiently dry. Hoe the autumn sowings, and when drawing them for use, do it so as to thin the plants; pull out those not likely to bulb well.

Parsley, if not already sown, should be got in : when thinning early sowings, take out first the uncurled roots.

Parsnips.—Sow early, on a deeply trenched sandy soil ; let the drills be shallow, and fifteen inches apart.

Peas.—Choose still a sheltered spot for the stated sowings, which should be at least every three weeks. Earth up and stake the early sowings, which serves for protection, and should be done early. The drills should be two and a half feét apart for the dwarf sorts, and three and four for the taller sorts, making them broad in the bottom, so as to have the peas sown thin and wide apart. Plant out those which have been forwarded in heat, but they must be well hardened previously; earth and stake them immediately.

Peppermint is increased by division of the roots; plant it in shallow trenches, and the rows a foot apart: common garden soil will grow it well.

Potatoes.—Those in frames must have plenty of air. Main crops should now be planted, preferring a light rather than a heavy soil; planting uncut sets, only thinning out the weakest eyes; and using manure of a simple nature, as leaf mould. Seed may be sown now, in a frame, which would come early. Keep turning the store roots.

Purslane.—At the end of the month, a small bed may be sown on a warm border.

Radishes.—Continue to sow successionally in a moist sandy loam. Sowings are often made amongst different crops, as they can be soon drawn for use, but it is not advisable.

Rampion should be sown in August, but it may be put in now with success: it is used as radishes, and is in use from November to April.

Rape often supplies the place of mustard, but it is not so tender, is quite hardy, and may be sown early in the month.

Rhubarb is sometimes sown and forwarded in heat, but this plan is not often practicable : sow in a bed of light rich soil, and cover about half an inch deep. It may also be propagated by slips or side shoots, and requires a deep, rich, sandy soil.

Sage.—Increase by slips, putting them in poor sandy mould, one foot apart, and eight inches in the row. Seed may also be sown now in a sheltered border.

Savoy.—Sow a little at the end of the month ; it requires a good soil.

Salsafy requires a deep, light, and rich soil: sow the main crop at the end of the month, in drills, about fifteen inches apart.

Scorzonera is not so apt to run to seed as salsafy, and may be sown about the middle of the month.

Sea-kale.—Sow in drills, or broad cast, on a previously well-manured and moist soil; when growing, water with liquid manure : use sea-weed as a manure.

Shallots.—Plant immediately, if not done ; and to prevent the attacks of the maggot, mix soot with the soil.

Skirret.—Sow in a light sandy soil, a little moist; they will also succeed by cuttings of the root: keep it in drills a foot apart.

Sorrel.—Make new plantations by dividing the roots, and planting in rows one foot apart, and eight inches in the row : a loamy rich soil suits it best.

Spinach.—Sow about the middle of the

month, and keep the hoe active amongst the advancing crops: if the soil is much beaten down, it will be well to point it with the spade or fork.

Thyme.—Sow now on a sandy soil, or increase by slips or layers, planting them six inches apart in the row, and a foot between; keep the plants rather deep planted.

Turnip.—Sow on a warm border about the end of the month, and cover the bed with fern or branches, which will assist to ward off the fly at this early period better than soot: thin the sowing of last month.

Wormwood is increased by slips, or by seed sown in autumn; either will now succeed in rather a rich soil: a few plants will suffice.

THE FRUIT GARDEN.

General Directions.—All the grafting apparatus must be in readiness; also the protecting materials at work; and if there is any pruning or planting to do, it must be done directly. Keep the hoe active in every part, serving as it does to counteract the effects of drought, to open the soil to the benefit of the atmospheric gases and to prevent weeds from gaining any ascendency.

Fruit-room.—Carefully pick out the decaying fruit, and keep the room as cool and close as possible, also very clean.

Grafting.—This operation may be proceeded with by the end of the month.

Almonds.—Treat much as the peach: it is found to succeed best grafted on the plum stock. Particular care is necessary to protect the blossoms from frost, as non-success chiefly arises from neglect of this. The *sweet almond* should be planted on a south aspect, in a loamy soil; the *bitter almond* flourishes in a light earth.

Apples.—Graft chiefly upon the *crab* stock; the *Paradise* and *French* stocks are most eligible for dwarfs, and the former is suitable for a moist situation. A soft hazelly loam suits apples generally; and in every case have a dry bottom, and plant them shallow. Keep down insects, to do which, no plan is so effectual as to *destroy them the moment they appear.* If very severe weather prevails, the blossom of the choice sorts must be protected.

Apricots.—Protect the flowers, either by netting, canvass, or branches: should they be a little touched with frost, it will lessen the injury to keep the trees shaded during the day. The plum is a good stock for the Apricot.

Cherries.—Fumigate, or syringe with tobacco water at the first appearance of aphis (green fly): Scotch snuff dusted on them, will also cure it; and some of these may be applied as *preventives.* The wild black cherry is the best stock, and the pips should now be sown. Defend the blossom against severe night frosts.

Cranberries must be planted on a swampy spot, or near the edge of a pond: artificial means for irrigation may easily be made; they will do to be planted now.

Currants.—New plantations can now be made; a rich loam, on a dry bottom, is the proper situation. Hoe amongst the bushes, and cut off any branch which appears too low to keep the fruit clean.

Figs.—These, if covered with spruce branches, as directed, will be gradually receiving more light. If they were not nailed previous to being covered, they must now be done. In pruning, care is only required to thin out those leaders which have become *bare* of fruit-bearing laterals. The fig is successfully grown in several parts of England as a standard.

Filberts.—Bed out young plants made from the layers, or put them in nursery rows. Each plant should have one strong upright shoot: those planted out where they are to bear, should be cut down to eighteen inches from the ground, allowing seven or eight shoots to grow to form the head, and keeping a foot of the stem perfectly clear. The soil required is a good loam, and no dung: and the plants to be about eight feet apart.

Gooseberries.—The attacks of caterpillars must be guarded against, thus:—Syringe with a liquid of lime, sulphur, and tobacco water, and sprinkle the soil below with soot: gathering them with the hand is effectual: hoe and freshen up the soil.

Medlars.—Old trees require no pruning: graft on pear stocks.

Nectarines.—Finish pruning and nailing: have the blossoms defended against frosts and cold winds.

Peaches.—Have these pruned and nailed, if not done. Protect from frost, and where there are flued walls, it is well, when the weather is very severe, to have them at work: it is also a good plan to have a temporary coping of wood, to project ten inches or so, to which (in addition to keeping all dry) the netting or canvass may be attached. Mulch the young trees lately planted, and if drought prevails, they must be watered. Plum stocks suit well for grafting upon, but budding is generally preferred.

Pears.—These often suffer from frost, and yet they are seldom covered. Mat, or net up those whose blossom is early, and if at all touched with frost, keep it rather dark for a day or two. The quince stock is frequently used for grafting upon, which makes young trees more fruitful. Cut down all the bad sorts and bad bearers, and graft anew with good sorts.

Plums which are in blossom early, should also be defended against frost. The weak blossom should be thinned out. The common plum is the best stock for dwarfs, and the Brussels for standards.

Raspberries.—Plantations may still be made upon a light and rich soil: plant them four feet in the row, and six feet between, making the rows to run north and south, so as to admit more sun light.

Service-tree.—A fruit seldom seen, in the way of the medlar: it is propagated by layers, and not procurable by seed, to be depended on. A common soil will suit it.

Strawberries.—These should be thoroughly cleaned, and if drought prevails, they must be watered: by picking off the early flowers, the fruit may be kept longer in season, inasmuch as those will fruit in autumn. Make a plantation of the alpines on a north border, and allow them to run together; these are easily procured from seed, and may be sown about the middle of the month, on a warm border.

Vines may still be planted: give them a porous soil of fresh loam, lime rubbish, and decomposed dung, about eighteen inches deep and twelve feet broad, the whole thoroughly drained. The sorts best adapted for out of doors, are the Sweet Water, Burgundy, the Muscadines, Esperione, and Black Cluster. Plant them five feet apart, and train them upright: cover a foot or two of the young cane with the soil, which will root freely.

Walnuts thrive in a soil of light sandy loam upon a dry bottom, and may yet be planted: attend to mulching and watering.

THE FORCING GARDEN.

General Directions.—Increase the amount of water and air: the water must always be of the same temperature as the place in which it is used; and the air should be admitted chiefly by the top ventilators, and increased and reduced by degrees: shut up always with a powerful sun heat. Continue to cover up with mats, which should be removed early. The late forcing houses will be benefited by a thorough watering and syringing. To those required to be very late, give air in every part; and untie the trees and bend them from near the glass or warm part of the house to the bottom, where it is much cooler: at the same time, close the houses every night, as the least frost would prove detrimental.

Asparagus.—Temperature, 60 to 65 degrees by day, and 50 to 55 degrees at night. Give more air, and should the weather prove cold, linings of hot dung may be applied: use tepid salted water when watering.

Cherries.—Temperature, 60 degrees by day, 45 to 50 degrees at night. Thin out the badly formed fruit, and disbud gradually. Syringe gently with tepid water in the mornings, especially when fine and bright.

Cucumbers.—Temperature, 75 to 80 degrees by day, 60 to 65 degrees at night. Syringe less as the fire heat is decreased; still in stoves they will require it once a day, in the morning or early in the afternoon, say at mid-day or soon after, taking care to close the house at the same time. Apply liquid manure to those in pots, twice a week. Those in an advanced state should be looked over every day, and pegged or tied and stopped at every joint, doing all in the warm part of the day to those in frames and pits. Pot off a few of those sown last month; and at the end of the month sow again. The heat in dung frames must be kept up, by renewing the linings of fermenting dung; and great care is requisite to prevent the steam from the dung escaping into the frames.

Figs.—Temperature, from 60 to 65 degrees by day, 50 to 55 degrees at night. Disbud, and stop the shoots, when about nine inches long. Give liberal waterings with liquid manure, and maintain a moist atmosphere.

Kidney Beans.—Temperature, 65 to 70 degrees by day, 55 degrees at night. Continue to pot off and sow for succession at least twice a month; they may soon be planted out. Keep the plants clear of red spider and thrip by syringing and having the atmosphere moist. If these insects are upon them, kill them by slightly painting the flues (when cool) with sulphur. Use liquid manure every alternate watering, in strength according to the state and age of the plants.

Melons.—Temperature, 80 degrees by day, 65 to 70 degrees at night. Air daily by the top ventilators. Those in pits and frames must be regularly covered at night, and uncovered early if the morning is fine. Give fresh linings when the heat declines. Cover over the surface of the bed with slates, which will keep the vines (or stems) dry and warmer. Train and stop these, and impregnate the fruit blossoms; look over this every day: determine the number of leading shoots left to a plant by the number of plants in the bed, in any case eight vines (to one light), and one fruit of ordinary size on each, will be sufficient; the very large sorts may be reduced to four. The fruit usually appears after the second stopping; they are first stopped at the third or fourth joint, then at the seventh or eighth, and when they are impregnated stop at the second or third joint beyond the fruit.

Mushrooms.—Temperature 55 to 60 degs. Keep the house dark. Excellent spawn will be found in the old beds, which can be at once introduced into the new beds, or may be laid in a corner amongst litter to increase, which it will soon do, and be ready for use when wanted. Cover the spawned beds with two inches of fresh loam, and beat it firm; some use green turf with success.

Musas.—Temperature, 75 degrees by day, 60 to 65 degrees at night. Supply these largely with liquid manure, and maintain a moist atmosphere.

Nectarines.—Temperature, 75 degrees by day, 55 to 60 degrees at night. Disbud, and thin by degrees, allowing always the most promising and best placed fruit and young shoots to remain; syringe twice a week in the mornings or very early in the afternoon.

Oranges.—Temperature, 60 degrees by day; 45 to 50 degrees at night. Shift all that require it, remove the exhausted soil from the roots, and replace it with a rich turfy loam. When they commence growing, those that are of unhandsome form may be cut back and the branches regulated. Thin the blossoms; and fumigate or syringe with tobacco water, on the first sign of aphides.

Peaches.—Temperature, 70 degrees by day; 55 degrees at night. Continue to disbud; take off first the fore right (front) and badly placed ones, allowing the backmost on the upper side of the shoot to remain, and also such as are situated where there is a casual vacancy to fill up. Thin the fruit to one-third more than will ultimately remain; syringe in the mornings or early in the afternoon, and shut up with sun heat. Pay due attention to the watering and airing of the late houses.

Pine-apples.—Temperature, from 75 to 80 degrees by day, and 65 degrees at night. Make a general shifting on the first signs of growth, or they may be planted out; use for mould a little sandy peat, and turfy loam, applying what manure is necessary in a liquid state. Those in pots advanced to a fruiting state, may be assisted by turfing around the outer edge of the pot, and filling up with a rich soil around the neck of the plant. Syringe them occasionally, and in sunny weather, and shut up with a command of sun heat immediately after.

Rhubarb.—Temperature 60 degrees. After being gathered, expose the crowns gradually, so that they may not be injured by cold.

Salading.—Temperature, 65 to 70 degrees. Still sow a little in heat, which will form a reserve in case of scarcity.

Sea-kale.—Temperature, 60 degrees. Those which are blanched without the protection of pots or boxes, must be carefully uncovered; after cutting expose them gradually.

Strawberries.— Temperature, 60 to 65 degrees by day; 50 to 55 degrees at night. Allow the sun heat to exceed that specified, if the fruit is required very early. Advance the successional crops a stage, and have them when in flower at a heat of 60 degrees by day; and 50 degrees at night. Water plenteously with liquid manure, and keep all moist until they begin ripening.

Vinery.— Temperature, 75 to 80 degrees by day; 65 degrees at night. Admit and take away the air always by degrees, and chiefly at the top. The thermometer does not always indicate the real state of the house, and must not be the only guide. Thin the berries to one-third when about the size of small peas, or as early as possible; the hands must be perfectly clean, and free of sweat; a small forked stick is serviceable in turning out the side shoots of the branches; these may or should be tied out, for which, zinc and copper wire is sometimes used, but most commonly bass matting; stop the shoots at the second joint above the bunch in ordinary cases; and where the shoot is weak allow it to grow further. Divest all of the laterals as they appear, except when the vines are very luxuriant, when they may be stopped above the first eye; avoid taking off any leaves. Let the syringe be only moderately used; have no formal steaming, but an atmosphere almost at saturation, by damping every available surface, such as walls, floor, &c., frequently. The later houses, when the bunches are seen and until they are past flower, must be kept at a heat not less than 63 degrees at night, and 75 degrees during the day, allowing the Muscats 5 degrees more. When the bunches can be detected, thin the shoots to the number required; when tying them in, avoid twisting or over-stretching the shoots, rather bring them gradually to their required position. Have the latest house cleaned, and put in a working order by the end of the month.

FLOWER GARDEN AND SHRUBBERY.

Sow about the middle of the month the principal selection of hardy annuals; and at the end of the month such as hollyhocks, scabiosa, campanula, carnation, polyanthus, Sweet William, aquilegia, &c.

Plant and Transplant every bulb that may yet remain, as ranunculus, anemone, &c. the remaining perennials, biennials, and autumn sown annuals, in the places where they are designed to flower: also finish planting evergreen and deciduous shrubs.

General Directions.—Complete all kinds of winter pruning; the laying of turf; and the general making and planting of edgings; if very dry weather prevails, thorough waterings must be resorted to in the latter case. Propagate, pot, and harden off bedding out plants. Roll and sweep the lawns; also the walks, and turn or fresh gravel them if necessary; the hoe must be kept active in every place, to keep down weeds and loosen the surface; rake only where a particular dressing is requisite.

Alpines may now be shifted, if not done in autumn. A soil of equal parts peat and loam, with a little sand, will suit them generally. In the case of these it is not so much large specimens that are required, as an interesting collection: they must therefore be divided, and put again into the same pots; five-inch pots is a convenient average size; the spare plants thus obtained, should be immediately planted on the rockery, or in some similar situation.

American Plants, (as Rhododendrons, Azaleas, &c.) are benefited by a thorough dressing of well decomposed dung, of a cooling nature, such as cow-dung. They may yet be removed with care. It is usual to plant them in peat soil, but many will do in loam. They prefer a sheltered situation, and one moderately moist.

Anemones.—Plant now, if not done; stir up slightly the soil of the early beds, and protect them when very cold or wet.

Annuals.—Those of the tender kinds, sown early, should be potted off, and the forwardest shifted. Prick out the more hardy kinds in boxes or beds, and when rooted, give them air freely, so as to harden them ready for planting out soon: sow again in heat. The hardy kinds should be sown where they are to flower; those in borders may be sown quite close to such plants as bulbs, which will soon be over. Prepare to have many of the hardened plants transferred at the end of the month, from the frames to a warm spot; meanwhile admit plenty of air to them when mild and genial.

Antirrhinums (Snapdragon.)—Plant out early either in beds, or singly; it does in any ordinary soil, and is valuable from its continuing long in bloom: propagate the good varieties; they will strike freely under glasses with or without heat. Seeds sown now will produce plants to flower in autumn.

Aquilegia (Columbine.)—Plant out early, and sow a few at the end of the month, in any common soil, with other biennials and perennials for transplanting.

Auriculas.—The show sorts must be divested of the side shoots, which may be struck for stock. Keep them still in frames; cover at nights; water in the mornings, and air freely when mild; slightly shade when the sun is fierce.

Calceolarias.—The shrubby and the best of the herbaceous sorts should be increased by cuttings, struck in heat; pot off those in store pots; also shift those which are required for central or conspicuous places; keep all under glass, but with plenty of air.

Campanulas (Canterbury Bells, &c.)—Plant out if not finished; sow a few at the end of the month. All the Campanulas are fine, as single plants; and the *C. carpatica* is excellent for bedding.

Carnations.—Sow a few of the border varieties at the end of the month in a frame. Plant out the cloves and common sorts, in a soil of equal parts loam and cow-dung, with some sand; if in beds, put them one foot apart in the row, and two between. The single ones may be planted out in masses. Have the compost in preparation for shifting the choice varieties.

Clematis and other deciduous climbers, which have been protected, must be uncovered gradually; they must be kept covered at night. Prune them, and tie or nail in a few of the best ripened branches.

Chrysanthemums.—Plant out, and increase by division of the roots; they luxuriate in a rich soil of loam and cow-dung. Plant a few against walls, terraces, or railings.

Crocus.—Now is a good season to mark the best varieties; keep the soil about them fresh and clean. Trap the mice if they attack the roots, which they often do.

Dahlias.—Where the seeds were sown last month, the seedlings should be pricked out and kept in a very slight heated frame. Propagate the striped sorts freely for the flower garden; also those required for general stock. Repot those which were struck early; and give them all plenty of air.

Evergreens, as Laurels, Arbutus, &c., may still be slightly pruned, so as to balance the head; but in pruning avoid too highly finished symmetry.

Fuchsias.—Partially uncover those in sheltered situations; cut the shoots back to fresh buds; and train them mostly to one leading stem. If they are much injured, cut them down to the ground, and they will throw out young shoots from the roots, and thus form compact and handsome bushes.

Jasmines and Honeysuckles.—Propagate still from cuttings; uncover gradually where protection was judged necessary, and have them all pruned, and nailed or tied up early.

Mignonette often comes well self-sown, but it is better to sow a little: in new situations, where sowing is necessary, it may be done now; cover the seeds slightly with soil.

Mimulus.—Increase by division; plant either in beds or patches. The numerous varieties of *M. cardinalis* and *M. roseus* are well adapted for large beds.

Pansies.—Plant the fine sorts at the end of the month, about a foot apart; leaf mould, cow-dung, and loam, equal parts, is an excellent soil. Propagate the scarce and good varieties in a gentle heat.

Picotees.—Plant out the more common sorts in a soil similar to that recommended for carnations. Prepare to pot the choicer kinds.

Pinus.—Still protect those which are putting forth young shoots. In planting specimens, drain the ground well; trench, and plant on the surface, using fresh loam to place about roots.

Pinks.—Put out those which have been kept in hand glasses; plant them a foot apart, in sandy loam, leaf mould, and rotten cow-dung; fill up all vacancies, and plant the old stools in the borders.

Polyanthus.—As the seeds germinate expose them gradually to the light, by removing the moss, by which the surface was covered. The established plants must be planted out.

Primroses.—In favourite spots place a little moss about the plants, to prevent the rains from dashing the mud on the flowers; plant young plants, and sow seed.

Ranunculus.—Should severe weather prevail, allow the covering to remain, not otherwise: lose no time in planting any of the roots that are left for successional beds.

Rockets.—Plant out those preserved in frames; any common soil will suit.

Roses.—Remove part of the coverings early. A few may be cut in close, to produce late flowers, and so form a succession; cuttings should be made of the prunings of the China, Boursaults, &c., and inserted under a hand-glass amongst sand; the Provins must be layered: grafting may now be effected, and the nearer the ground the better.

Stocks.—Pot and prick out the early sowings; remove them to a cold frame when they are got established, and harden them off by airing freely. Plant out those kept in pots during winter, say at eighteen inches apart; and the richer the soil the better.

Sweet William.—Finish planting out; let them be put in masses. Sow a little seed at the end of the month.

Sweet Peas.—Harden off those sown last month, and sow now in the open ground, both in patches and single rows.

Thrift Edgings may now be re-laid on a similar plan with those of the dwarf box.

Tigridias.—Those early started must be removed into a cold frame to harden them off: plant additional roots for succession.

Tulips.—Protect at night; also in cold wet days; dress them at the end of the month. Let them have any gentle and mild showers that may occur.

Violets must be kept clean; in some cases a little moss may be found necessary to keep the flowers from being dirtied. Provision should be made at the end of the month for the following season, by planting out the young rooted runners in frames, upon a rich soil; keep them close and shade them for a day or two; then air freely, and afterwards remove the sashes altogether. Another plan is now to scatter some fresh soil over the beds, in which the young runners will root, and early in autumn take them off and plant them in prepared beds or frames.

WINDOW GARDENING.

The chief points to attend to, are to counteract the effects of drought, and draughts of air, and to prevent the plants becoming drawn from the increasing heat. To meet these difficulties place the pots in which the plants are growing within another of larger dimensions, filling around and covering it with moss or sand, and thus preventing evaporation, and securing an equable temperature. Avoid placing the windows or doors open at both sides of the room at once, or admit the air at the top only. Be regulated a good deal by the direction of the wind. To prevent the plants getting drawn in mild weather, put them out of doors in the forenoon, and always keep them as near the glass as may be practicable.

Bulbs, such as Hyacinths, Crocus, &c., will be in full flower at the end of the month; they should then slightly be shaded from the mid-day sun, and not suffered to get dry.

Begonias will require additional watering as they advance in growth, but do not saturate the soil; stake them up to avoid accidents.

Camellias.—Those past flower should be shifted, and kept as warm as possible; the object is to excite them to grow vigorously, so as to form their flower-buds and wood for next season. Give a little more water, but with the same care as before.

Cinerarias.—Tie out the leading shoots, so as to admit the air about them, and give room for growth; they require a good deal of water just before and when in flower.

Fuchsias.—The early plants should be thinned, and if bare of shoots stop the whole, excepting the leader; those with one leading stem are the most handsome. Water freely, if they are growing luxuriantly; excite the whole of the plants into growth; when they are budding out, shift them into a fresh soil of leaf mould, sandy loam, and rotten dung.

Geraniums may have a little liquid manure when showing their flower-buds: those required for late flowering should be shifted; thin out all the weak shoots, and propagate good sorts.

Myrtles and other evergreens may now be shifted, if not already done; keep them shaded and close for a day or two after; water and syringe freely.

Roses, if in flower, should be shaded slightly; destroy any vermin, such as the aphis, that may attack them before they do serious injury; syringe them with tobacco liquor occasionally. Try, however, to *prevent* them getting established.

Primulas, which are, perhaps, the best winter and spring flowers for the window, must be watered moderately: save seeds of good varieties. The double ones must be carefully grown, but allow them to *rest* a while after flowering.

Violets.—Keep near the light; the young runners should be encouraged to root by shaking rich soil amongst them when past bloom; grow these to flower next season. The old plants will also do again if the soil is renewed. Plant them all in the open air to grow until September.

Wardian Cases.—If the interior has been kept dry, give a thorough watering, first having taken away all dead leaves and plants, and the exhausted soil, replacing the latter by fresh earth of a suitable kind.

PITS AND FRAMES.

The principal operations will consist in sowing, propagating, potting, tying up, hardening off, airing, watering, and covering up properly at night to exclude frost.

Annuals.—Those tender kinds that were sown early must be shifted again, and others potted off. The amaranths, thunbergias, &c., must be plunged in a warm frame and kept near the light. The main sowings of cockscombs, balsams, browallias, and such like, should be made at the end of the month. Half hardy kinds, as schizanthus, brachycome, rhodanthe, &c., should also be sown again. The hardy species, as collinsia, gilia, &c., should be hardened off, and put out at the end of the month.

Half hardy plants, as calceolarias, petunias, verbenas, &c., must be potted off singly, or two in a pot, and kept close for a few days, and then moderately so until established, and afterwards gradually hardened. Get a proper notion of what will be required for bedding out, so that now they may be propagated as fast as possible; and to get these young plants forward, use the soil and water a little warmed; accustom all these, particularly the young stock, to a free circulation of air, to prepare them for full exposure. Should it happen that frosts come unexpectedly and get at the plants, a remedy will be found in at once syringing them repeatedly with very *cold* water, and removing them to a *cold* frame, where they must be kept dark until thoroughly dry.

Forcing Pit.—The utmost care is requisite to keep the roses and other flowers perfectly clean: repeated fumigations of tobacco, a moist atmosphere, and a steady heat of 60 degrees at night, and 70 degrees by day, will go far to secure this. The bulbs, and indeed every thing that is growing rapidly, will be assisted by watering them, say twice a week, with clear liquid manure: it is of importance that it is given, especially at first, in a weak state; the state of the plant must determine the strength and quantity. Give some air every day, and shut up early; still apply the chief waterings in the morning.

THE GREENHOUSE.

Temperature, from 45 degrees to 55 degrees by day; and from 35 to 45 degrees by night.

Ventilation.—Give air freely at the top and bottom sashes, also by the doors in mild weather: no fire heat is ordinarily necessary.

Watering.—Still (in the early part of the month) avoid spilling water as much as possible. Towards the end, a thorough syringing will be of benefit, if done in the morning, so as to be dried up by mid-day. Increase the water at the roots, but apply it so that the soil may be thoroughly moistened. Newly-potted plants must be watered sparingly.

Potting.—Select those plants first for potting which require it most: where the roots are matted, loosen and partially untwine them, and make the new soil and the ball unite. It is not always necessary to remove thoroughly the drainage crocks of the former potting. After potting keep them a little close for a few days, always removing them to their place of growing again, before watering.

Soils.—Have a stock of turfy loam, peat, leaf-mould, river and silver sand, with charcoal and crocks all under cover, and ready for use. It is not important to have had them previously mixed, but it is well if they have been exposed to the frost: they should be moderately dry. Use new or clean washed pots.

Dressing.—Continue to keep all tidy; give a general look over the plants, for the purpose of cleaning them, re-staking, renewing tallies, and surface, and tying up the various plants requiring it.

Insects.—Never tire in taking means to destroy these: sponge the plants that the syringe cannot clean: fumigate often, or instead, use diluted tobacco water.

Aloes and succulents generally will be better shifted now than later; use turfy loam, leaf-mould, and sand; drain well, and give little or no water.

Agaves and large succulents may have a little water, if growing; shift those not yet potted, or put in tubs, using a good turfy loam, and adding a little charcoal.

Alströmerias.—If the pots have been covered with some plunging material, remove it early, before the plants are far advanced, and give the utmost attention to prevent injury from slugs; air must be plentifully given them.

Annuals.—Sow again at the end of the month. Give those growing freely a large shift before the roots become matted; keep all near the light, in a moderate heat, and give air every day.

Azuleas.—Many will now be in bloom; these require more water; shade slightly if the sun is violent; keep those for late blooming in a cool and airy situation.

Calceolarias.—A few will again require a shift, and these must be watered sparingly; stake and tie them up neatly. Make a large specimen or two of the shrubby sorts, as *C. rugosa, angustifolia,* &c. Seed may be sown now, if not done in autumn.

Camellias.—Pot those whose bloom is past, if not done; peat and light loam in equal parts is the best soil. They will make wood and flower buds in a heat of 60 degrees, not less; attend to this with the early plants. Those in bloom must be kept cool; and the late sorts must be brought gently along; to push them at this stage is fatal to the flower buds.

Cape Bulbs, as ixias, gladiolus, &c., must have no artificial heat further than the greenhouse or cold frame affords; air freely, and increase the amount of water.

Cephalotus follicularis (New Holland pitcher-plant).—Maintain a considerable degree of moistness all about it; also closeness of the atmosphere by means of a glass.

Cinerarias.—Give these all the light possible, copious waterings, and air profusely: stake them as they require it. To make a very *large* specimen quickly for a conspicuous place, pot two plants together.

Chrysanthemums.—Commence to take off a few of the young shoots from the early sorts first; put them in four or six inch pots, in a soil of loam, leaf-mould, and sand, and keep them rather close for a week or so; cuttings strike in heat. Plant out a few old stools in a warm place and rich soil, from which to take layers, &c. (for dwarf plants) in July.

Crassulas and allied plants, as sempervivium, must be kept at the warm end always, and yet very sparingly watered.

Cyclamens.—Keep these a little warm, and when past a flowering state dry them off gradually, but not too much.

Epacris.—When cut back and beginning to grow, give a slight shift, water and keep them close for a few days: those in and coming into flower should be placed in an airy and cool position.

Ericas.—Give increased quantities of air and water; the former night and day, excepting when very cold winds prevail; the latter should be applied liberally, to avoid the necessity for frequent repetition. Those plants that are producing long bare young shoots should be stopped, and those past bloom must be cleaned, and if unhandsome, may be partially cut back; defer shifting them until they begin to grow. Any which appear to be confined in their pots should be shifted into the next size larger, using a soil of sandy peat, and mixing it with drainage, as charcoal, sandstone, &c.; place them together, slightly shade if the weather is bright, and keep them close for a few days.

Fuchsias.—Continue to shift these progressively as the roots touch the sides of the pots; those in an advanced state will bear a good degree of heat with a corresponding increase of moisture. Train the plants to suit their respective situations: those with one stem will be the most useful; stop the shoots all over, if the branches are thin and irregular. Shake the soil from the late sorts which are just starting to grow, and pot afresh.

Gompholobiums, and slender creepers, should be placed in a light and airy situation; thin, regulate, and tie regularly according as they grow; give them a little freedom of growth: be particular in watering.

Haworthias, Apicras, &c.—Give a small shift: keep them at the warm part of the house, and give but little water.

Helichrysums.—Water sparingly, and keep them free of the other plants; they like light and air.

Leschenaultias.—Shift carefully, if confined, into sandy peat with a little loam and charcoal mixed: do not stop them until they take with the pots: keep them in the light, and rather warm.

Lilium japonicum (Japan lily).—Maintain a healthful, moderate, and steady temperature for these: stir, and add a little fresh soil as they grow.

Mignonette.—Stake, and keep these near the glass, and where there is a free circulation of air.

New Holland plants, as acacias, hoveas, bossiæas, &c.—The acacias will soon be charming objects, and will require a good deal of water; when past flower, and after resting a little while, give them a large shift: most of the other genera are more delicate, and the common error of overshifting and overwatering must be avoided.

Orange-trees.—Keep these somewhat warm and moist as they are making fresh shoots and roots, but also give air, without which they are apt to become spindly. Strong shoots in open parts of the head may be stopped; and stop them all over, if required, as they will grow more regular. They are found to do in a light as well as a strong loam; the plants generally make *most roots* in the former, and liquid manure then takes the place of solid manure.

Oxalis.—Admit air freely to these when mild; give additional water to those advancing in growth; keep them moderately moist.

Pelargoniums. — Shift those struck in autumn, which should be again stopped two weeks previous to shifting, or be deferred until they have taken with the new pots: do not stop the old plants now, unless they are very thin of shoots. Train a few plants to one or two shoots, the trusses from which will be double the size of the other bushy plants. Go over the *prize* plants again, and see that no useless spray is left. Propagate freely; the cuttings rooted now may be flowered *well* in October, or early the following March.

Primulas.—The superior formed, striking coloured, and semi-double sorts should be put in a place away from the others, so as, if possible (keep them a little dry), to save seed from them. Pick off all the seed pods of those not required, which improves their flowering amazingly. Pick off decayed leaves, stirring the soil, and giving additional water cautiously.

Proteas, Banksias, Dryandras, &c. must not be shaded by other plants; they must be carefully potted, well drained, and some charcoal lumps mixed through the sandy loam and peat; water statedly and well, but not often.

Rhododendrons.—Waterings of liquid manure are beneficial, just before they come into bloom; keep them moist when growing, and in a dryish cool atmosphere when in bloom; put them in a cool place to rest awhile when past flower. Those kept in pots must be shifted, and grown steadily: a number may be again planted out, when the danger of frost is past.

Roses.—The principal number of the plants must be brought on slowly and naturally; a few may be gently stimulated by liquid manure and warmth. Those that were forced early must be put in a shady yet light situation. Fumigate when symptoms of aphides appear. A moist air is always requisite to promote growth healthily.

Salvias.—Now is an excellent time to propagate these, increasing only the showy sorts; they must have a little heat and a mixture of sand and leaf mould. The specimen plants must be kept cool and topped. *S. splendens* is perhaps the best for pot culture, and must be grown in heat, in a richly manured soil.

Stapelias.—Put these in the warmest part of the house, and near the glass: they strike root readily when just laid on the surface. When shifted at the end of the month, shake away, or rather remove a great part of the old soil; drain thoroughly, and use a soil of lime rubbish, light loam, and silver sand, in equal parts; use rather *small* pots, and give very little water at any time.

Tropæolums.—Look to these almost every day, and direct, and tie out the young shoots, so as to have an equal amount of flower all over; they must not be crowded amongst other plants; grow them steadily.

THE CONSERVATORY.

Temperature from 55 to 65 degrees by day, and about 45 degrees at night. Shade during strong sunshine; use very little fire.

Ventilation.—Still beware of causing cold currents, but both front and top sashes must be opened; canvass placed before the front openings, will soften the air as it enters.

Watering.—The quantity applied must be increased, and it should still be given early in the morning. Towards the end of the month, it may be necessary to look over again, early in the afternoon. Give those planted out a thorough soaking, unless it was done late last month.

Arrangement. — The New Holland plants will soon be in full bloom if not so already. Group them, *even if the plants are few and the house small.* Form a grove of acacia, or oranges, and let them remain so for a week; place them about a seat, thus forming an arbour. The camellias may also be so arranged; they have (though rich) a sombre appearance when together. Put hyacinths, primulas, and such like in masses, or as edgings. Fine specimens of rhododendron, azalea, acacia, amaryllis, &c. should be made conspicuous. Cinerarias, calceolarias, geraniums, &c. are also beautiful, when grouped by themselves. These are mere hints, which, in practice, will suggest others. Such a mode of arrangement is calculated to call up more pleasing emotions, than the staging and stiff-like appearances of the usual style. Frequently change the position of the plants, in pots or tubs, so as to give freshness to the scene.

General Directions.—The strictest tidiness and cleanliness must be maintained, the necessary operations in securing which, together with all other work, such as staking, tying, sponging over the leaves, attending to the climbers, returning plants to their respective departments, syringing for aphides, &c., should be effected as early in the day as possible, so that the house may throughout the greater part of the day be available for the use of the family, to the female portion of which it offers a delightful promenade, especially at this season.

THE PLANT STOVE.

Temperature, from 70 to 80 degrees by day, and 60 to 70 degrees at night.

Ventilation.—Admit air every day, regulating the *quantity* according to the temperature externally: pay strict attention to shutting up early, to lessen the demand for firing.

Watering is at all seasons an *important* operation. As the demand is increased with the advancing season, so increase the supply, proportioning it to the *state* and *habits* of the various plants. Give preference always to rain water; river water next; and make it of the same warmth as the atmosphere of the house. Syringe in a shower-form every morning, and make the fires dry it up before night if the sun does not appear to do so. Keep the floors damp always.

Beans.—Earth up the advancing crops, and if any were sown thickly and raised in heat they may now be planted out: plant a main crop at the end of the month.

Beet.—Sow the main crops upon a deep, rich, and sandy soil, in drills fifteen inches apart, and one inch deep, about the end of the month.

Borecole.—Under this head are included all the kinds of kale. Sow at the end of the month: those which proved to be fine curled sorts transplant to a good situation to be preserved for seeds.

Borage is usually self-sown, but if not thus to be depended on, scatter a few seeds in any spare corner; when in flower, it is valuable for bees.

Brocoli.—Sow early for autumn crops; the purple sprouting and Snow's early white are suitable. The main crops may be sown at the end of the month. Protect the seeds from birds, by netting or branches, and the young plants from cutting winds. Go over the old plantations regularly, and cut the heads before they begin to open, taking care, when they are wanted to be kept for a few days, to cut them six or eight inches below the flower, which makes it easy to preserve them: remove the roots of those cut, totally from the ground.

Brussels Sprouts.—Preserve some of the plants which prove to be superior for seed: sow at the end of the month, in a good rich soil.

Burnet.—Sow a little in a shady situation; or increase it by division of the roots, and plant nine inches apart.

Cabbages, for use in summer, must be sown early; keep each kind distinct. Plant out the autumn sowings, the dwarf sorts about fifteen inches apart; it is a good plan to make drills with the hoe, in which to plant them, and draw the earth to that side from which the cutting winds proceed.

Caraway.—Sow a little at the end of the month; the young leaves are used in soups.

Carrots.—Thin out partially the early sowings, as many will soon be drawn for use. Sow in the beginning of the month on a warm border; the main crops defer until the end. Have the ground thoroughly wrought: the soil should be deep, rich, and of a sandy nature; choose a calm day for sowing; the seed is usually rubbed amongst sand to separate it, but this is not imperative; sow in drills fifteen inches apart, and trample or roll in the seed.

Cauliflower.—If no spring sowing has yet been made, do it immediately (in a slight heat), to succeed the autumn sowings: prick out the early plants, and forward them under glass. The wintered plants should be put out at the end of the month: thin out those under hand-lights to two or three plants; air profusely: should the weather be unfavourable, defer planting out. Those which are in pots, and appear to be confined, may be shifted into a larger size, and kept growing, otherwise they are apt to button.

Celery.—Sow early in a slight hot-bed; cover very slightly: prick out into another frame when about two inches high; give air freely. Use a rich soil in all stages of growth.

Chamomile.—This useful medicinal plant is easily increased by division or cuttings; they will grow readily in any common soil.

Chervil.—Sow a little in any spare corner; it requires to be sown monthly for succession.

Chives.—Plant in any common soil; increase by division of the roots: plant it as an edging or in a bed, a few inches apart: it is very useful for spring salads.

Clary.—Sow in a bed, if not done last month, in any common mould; it is not much used.

Coriander.—If not sown last month, may be got in now; give it rather a good situation and a fresh soil.

Cumin.—Sow a small bed in any open situation; it is not much used.

Cress.—Sow towards the end, in an open border; the early sowing will be much assisted by being protected with hand glasses; grow it as quickly as possible; double the quantity of cress, compared with mustard, will be found proportionate.

Dill is best sown in autumn, but may now succeed very well; sow a small quantity in a light soil.

Fennel.—Sow early in shallow drills, from six to ten inches apart; a few plants will be found sufficient; thin them to sixteen inches apart: or increase by division.

Feverfew.—Sow in a light soil, and transplant to a foot apart; in addition to its medicinal qualities, it makes a showy border flower.

Garlic may still be planted in drills two inches deep, ten apart, and six between the roots: hoe the autumn planting.

Herbs generally may be sown, and increased by division of the roots this month: it is in many respects desirable that a piece of ground be exclusively devoted to them.

Horehound.—Sow at the end, in a dry situation, either in beds or drills, a foot apart and an inch deep.

Horse-radish.—Plantations may still be formed; and as the ground is levelled, a sowing of radish, lettuce, or cress may be made.

Hyssop.—Sow on a border in a light mould, covering slightly; it may also be increased now by division of the roots, by cuttings, or by slips.

which are just past blooming, allow to rest for a little.

Lantanas.—Shift, before they grow much; use a soil of sandy peat alone; pot off the cuttings, and by topping they can be formed to any shape.

Luculia gratissima.—Syringe with tobacco water if green fly appear; grow in a steady heat. The old plants may be slightly cut back if a large stock is required, not otherwise; slightly water when not growing freely.

Lycopodiums are very accommodating, for any situation not extreme (in the stove) will suit many of them. Suit the watering accordingly, and if the atmosphere is quiet, damp, yet pure, there is no danger.

Malvaceous Plants, as hibiscus, must be kept growing: pot off the seedlings, and let them have sufficient air to prevent a lanky growth, and secure a sturdy one.

Manettias, and other tender climbers, must be preserved from insects; keep tying them in neatly, but not too often; cuttings in pure sand will strike freely under a bell glass.

Melastomas.— Supply largely with heat, moisture, light, and space; they are seldom well grown, for want of these.

Melo-Cacti may have increased moisture and heat as the season advances; liquid manure is found to push them on satisfactorily if not applied in excess.

Musas.—Let them have liquid manure at the roots, and moisture and heat in abundance. The *M. chinensis*, or *Cavendishii* suits low houses best, and can now be shifted into their fruiting pots or tubs.

Nepenthes (Pitcher Plant).— Maintain a rising heat and humid atmosphere; these are not difficult to strike if care be taken, but they can be propagated by layering.

Neriums.—Now the most of them can be taken into heat and moisture, increasing it gradually and lavishly.

Nymphæas (Water Lilies) may be shifted into a rich soil, and afterwards kept warm; they will flower in a pot if covered with water.

Palms.—If confined at the root should have a shift, if not done; keep them close, moist, and shaded after; give the whole a high temperature, although many will live in a very temperate degree of heat.

Polianthes (Tuberose.)—Give plenty of light, and a moist heat, and increase the proportion, and water as they grow.

Thunbergias—Syringe twice a day, and keep them from a dry heat. Remove some of the early plants to their flowering pots, and put stakes or trellis to them; give the young shoots a clear direction and they will take it, without being tied. Pot off the last sowing; peat, loam, and leaf mould equally divided, grows them well.

Vincas.—If possible, keep them from flowering when other flowers are plentiful. Bring them into luxuriance; then top them, and perfect their shape; cuttings may be struck at any time.

THE ORCHID HOUSE.

Temperature.—The warm house for the Indian species, 80 degs. by day, 70 degs. at night; the cool, or Mexican house, 75 degs. by day, and 60 to 65 degs. at night; allow a few degrees more or less, according to the weather.

Ventilation. — Admit air cautiously yet pretty freely by the top, especially in the cool house; give and take it off by degrees, and shut up soon enough to cause the thermometer to rise 5 degs. by the natural heat. After shutting up see that the fire heat will meet the decreasing temperature in due time.

Watering.—Supply the growing plants increasingly with moisture, not so much at the roots as in the atmosphere; syringe gently in bright weather, twice a day, and not at all if dull; every part of the house should be kept damp. It will be found that the terrestrial species require more every way than the epiphytes. Always use tepid water.

Insects require constant efforts to destroy them, even when the plants are considered clear. It is a good plan to mark the places where the plants are damaged, and look over these at night, when the enemies may often be detected.

Potting.—A number of the plants may require shifting; and the earlier in the month this is done the better. Let the pseudo-bulbs of the terrestrial species be covered an inch or so.

Shading.—Towards the end of the month, and as the sun gets brighter and stronger, it will be necessary to apply shading to the roof of the house on the sunny side. Those plants which have been shifted, and are making tender shoots, most require this attention.

Soils.—The cyrtopodiums, and allied kinds, do best with *liberal* treatment in every respect; broken bones may be intermixed with the turfy loam. Sticks of charcoal, also, may be mixed with the turfy peat, which is a standard medium suitable to the roots of these plants. Many of the cattleyas, lælias, phalænopsis, &c., must have little else than a bare block of wood; any kind of wood will suit, if not resinous. Experiment with some plants if practicable, for there is much to learn respecting them; for instance, the *Catasetum longifolium* does best when turned upside down.

Imported Plants.—Keep rather cool than otherwise; allow them generally to make their first growth on blocks. Syringe occasionally, but regulate this by the heat; once a day is not too often in warm weather.

BOTANICAL TERMS,

CHIEFLY APPLIED TO ROOTS OF PLANTS.

The different kinds of roots are not numerous: some terms often applied as to roots, such as bulbous, tuberous, &c., really belong to stems of a peculiar nature.

Bulbous (*bulbosus*); a term often applied to what is called a root; but what is called a bulbous-root is a peculiar kind of leaf-bud attached to a thickened stem: the fibres issuing from the under side of bulbs are the real roots.

Fasciculated; applied to tubercular roots, when they grow in clusters.

Fibres, fibrils; the small thread-like, or minute subdivisions of the roots; they are little bundles of annular ducts—sometimes of spiral vessels—encased in woody fibre, and covered with a lax cellular integument. The apex, which has the property of absorbing fluid with great rapidity, consists of extremely lax cellular tissue, and is called the spongiole, or spongelet.

Fibrous; applied to roots when divided into a number of slender thread-like filaments, or fibres.

Fusiform; applied to roots which are fleshy, straight, and tapering more or less to each extremity, as in the radish: the term is equivalent to tap-rooted.

Globose; this term is applied when the root becomes dilated immediately below the base of the stem, as in the turnip.

Granulose; having small fleshy particles intermixed with the fibres; divided into little knobs, or knots, as in some kinds of saxifrage.

Granular (*granulatus*); same as *granulose.*

Macrorhiza; large or long rooted.

Nodulose; applied to fibrous roots having occasional dilatations, similar to granulose; this form occurs in some of the vicias.

Præmorse (*præmorsus*); applied when the end of a fleshy root is abrupt, and looks as if bitten off short. The *Scabiosa succisa*, or devil's bit, is a familiar example of this kind of root.

Radicle (*radicula*); this term is often applied indiscriminately to fibrous roots, but the root of an embryo is more properly expressed by it, and it is convenient to confine it to this signification.

Ramose; branching, applied when the root is divided into a multitude of branches and fibres.

Rhizina, rhizula; terms applied to the young roots of mosses and lichens.

Spindle-shaped; straight and fleshy, tapering to both extremities.

Spongioles, spongelets; the absorbing apex of the fibres, by whose agency the plant is nourished by the food extracted from the soil in which it is placed.

Tubercules; fleshy roots composed of distinct lobes, accompanying the fibrils of some plants, and apparently serving as reservoirs of nutriment: the roots of the orchis are of this kind.

Tuberous; the term is often applied to what is called a root, but the tuber is a kind of stem. The so-called root of a potato is a tuber.

Tap-rooted; having fusiform, or spindle-shaped roots.

CHIEFLY APPLIED TO THE PARTS OF THE STEM.

Adventitious; applied to buds which appear accidentally, or out of place, that is, in a position where buds are not usually produced in the particular kind of plant.

Acaulis; stemless. Strictly speaking, all plants have a stem more or less developed, but in some, as in the common gentianella, it is very short, and such plants are said to be stemless.

Adnascens, adnatum; terms applied to the little bulbs developed in the axils of the scales of which the original bulb is formed, such as are called by gardeners, *cloves.*

Adnascentia, adnata, appendices; terms applied to a slight modification of the sucker, such as the shoots thrown up from the underground part of the stem of pine-apples.

Aiguillons; stalked glands formed on the rose and other plants, in the form of rigid hairs; by some improperly called *setæ.*

Ala; an old term, synonymous with *axil.*

Alburnum; the latest formed, and outermost layer of wood; the sap-wood situated immediately beneath the bark.

Anabices; a term applied by some to the stems of cryptogamic plants.

Articulate (*articulatus*); jointed; falling in pieces, or separating readily at certain points, which are called joints or articulations. Sometimes the term is used in reference to stems which appear only, and are not in reality thus jointed.

Axil; the point between two diverging branches, or between a leaf and a branch.

Bacilli; a term applied to the little *stem bulbs* borne by some plants.

Bark; the external ring, or covering, which envelopes the stem, lying immediately over the wood from which it is separable.

Brachiate (*brachiatus*); when [illegible] branches diverge at right angle[illegible] stem, crossing each o[illegible] said to be brachia[illegible] in four directions. [illegible]

Branches; the [illegible]

stem, as distinguished from the smaller ramifications, or twigs.

Branchlets; same as twigs; the smaller ramifications of the branches.

Branched (*ramosus*); divided into many branches.

Brindilles; the twigs, or branchlets of the stem; same as *ramuli*.

Bulbo-tuber; a term applied to the *cormus*; which is also sometimes called *bulbo-solidus*.

Bulbilli; little bulbs borne on the stems of some plants, as in some kinds of lilies.

Bulbs; distinguished by Linnæus as leaf-buds of the roots, which conveys a good idea of their nature; they contain the embryo of a stem, surrounded by imbricated scales, the outer of which are membranous, and cohere into a covering, as in the onion, or consist of distinct and separate pieces, as in the lily.

Calamus; a term applied to fistulous simple stems without articulations, such as those of rushes.

Cambium; a mucous viscid secretion found between the bark and the wood; the elaborated sap.

Caudex; the trunk, or principal stem; applied chiefly to that of a tree.

Cauliculi; small stems produced from buds at the neck of a plant, without the previous production of a leaf.

Caulis; a term applied to the stem.

Cellular integument; the *epidermis*, or scarf-skin.

Chalumeau; a French term for *calamus*.

Climbing stem; a stem which elevates itself by clinging to surrounding bodies, by means of roots or tendrils which it produces.

Cloves; small bulbs developed from the axils of the scales of larger ones.

Coarcture; a term applied to the *collet*.

Collet, collum; the line of division between the root and stem; the neck.

Coma; the assemblage of branches forming the head of a forest tree.

Corm (*cormus*); a solid fleshy depressed subterranean stem; often considered to be a root, though this is an erroneous application; the fleshy base of the crocus is a corm.

Cortical; of or belonging to the bark.

Corticate (*corticatus*); harder externally than internally; resembling bark.

Corymbose (*corymbosus*); arranged like a corymb, which term is more usually applied to the arrangement of the flowers.

Creeping stem (*sobole*); a slender horizontal under-ground stem, emitting roots, and young plants at intervals; the couch grass (or quitch-grass of some) is an example far too familiar of this kind of stem.

Culm (*culmus*); the stem of grasses and allied plants; the straw of wheat and other corn plants will furnish illustrations; the culm is hollow, and jointed.

Decorticate; to divest of bark.

Dichotomous (*dichotomus*); divided always in pairs; that is to say, forked with two prongs: many stems branch in this way.

Dumose (*dumosus*); low, and much branched, applied to shrubby plants of this particular habit.

Duramen; the heart wood of trees; it becomes harder and deeper coloured; in some trees, as in the oak, it becomes of a deep brown, and in the ebony quite black.

Endogenous; growing by additions to the interior: endogenous stems have neither the pith, bark, medullary rays, nor wood distinguishable, but all are irregularly arranged. Monocotyledonous plants produce endogenous stems: the stems of palms afford an illustration.

Epidermis; the exterior coating of cellular substance; the *cuticle* or cellular integument.

Enodis; applied to stems which are altogether without joints.

Excoriate; to divest of the bark or skin.

Exogenous; growing by additions to the exterior; an exogenous stem consists of bark, wood, pith, and medullary rays, all more or less obvious and distinguishable. All our timber trees are of this mode of growth. Plants having this description of stem, are analogous to dicotyledons.

Flagellum; a trailing shoot, such as that of the vine.

Gemmæ; leaf buds of the stem.

Geniculum; a term applied to the joints or nodes of the stem.

Hami; hairs curved back at the point, so as to form hooks.

Haulm; the stems of herbs.

Hybernaculum; the shell of a bud, formed of the young leaves in the form of scales, imbricated or overlying one another. It affords protection to the tender parts during the winter.

Internode (*internodium*); the space that intervenes between the point of insertion of the leaves, or between the joints or knots of the stem. The node is the point of the stem whence the leaves arise; the internode is the space between them.

Leaf buds; the bodies which contain the rudiments of young branches in an incipient or embryo state; they are situated on the stem; growing points, covered with rudimentary leaves.

Lecus; a term applied to the *corm*.

Lenticelles; lenticular or lens-shaped glands; brown oval spots found on the bark of many plants, as in the willow.

Liber; the innermost layer of bark, or interior lining of woody tissue; it is the finest and most delicate of all the layers of bark, and is often beautifully reticulated, as in *Daphne*

Lagetto, the Lace-bark tree. Garden mats are made from the liber of the lime-tree, or linden.

Ligneous; of a woody nature or substance, formed of wood.

Medulla; the pith; the centre or heart of the vegetable body, within the wood.

Medullary rays; lines radiating through the wood from the centre to the circumference; they have been so called, upon the presumption that they proceed from the pith, but few of them have been fairly traced to it.

Merithallus; a term applied to the internodes, or spaces between the joints of the stem.

Naked bulb; a bulb formed of distinct and fleshy scales, without a united membranous covering; the bulbs of the lily are of this kind.

Node; the part of the stem from whence the leaves proceed; the spaces between them are called *internodes.*

Offset (*propaculum*); a short lateral branch produced in herbaceous plants; it is terminated by a cluster of leaves, and capable of taking root when separated from its parent; is nearly related to the runner: some kinds of sempervivum produce this kind of branch.

Peridroma; a term applied to the *petioles,* or stipes of ferns.

Pilulifera; bearing little balls or globe-shaped bodies.

Pith; the central spongy cellular substance of the root and stem, the *medulla.*

Plateau; a term applied to the *corm.*

Propaculum; a term applied to the *offset.*

Pseudo bulb; an enlarged aërial stem, resembling a tuber with an extremely hard cuticle, and retaining on its surface the scars of leaves which it has once borne: this term is applied to the bulb-like stems of orchids.

Rami; the branches or divisions of the stem: *ramuli,* are branchlets, or branches of smaller size.

Ramilles; a term applied to the smaller twigs or branches.

Rhizoma; the root-stock, a prostrate thickened rooting stem, which annually produces young branches: the root-stock is common among irises.

Runner (*sarmentum*); a prostrate filiform stem, forming roots, and a young plant at the extremity, and there throwing out other runners: the strawberry is a good example.

Sarmentose; producing runners.

Sarmentum; a runner; a peculiar kind of prostrate stem.

Scandent (*scandens*); having a climbing habit.

Scion; a term given by Du Petit Thouars to the first young shoots produced from a ligneous plant in the year.

Scoberia; a term applied to the *rachis* in the spikelets of grasses, which has a toothed flexuose appearance.

Silver grain; a term applied to the medullary rays, which often have a silvery appearance, as when appearing in the wood of the oak.

Sobole; a slender, creeping stem, growing horizontally below the surface; the suckers of trees and shrubs are sometimes so called.

Spines; small indurated and pointed projections from the branches, having the same woody character.

Spinous; having or producing spines.

Stemless; applied to plants apparently destitute of an aërial stem, or having but a very short stem.

Stipes; a secondary stem, supporting the leaves of palms; the petiole of the frond in ferns; the trunk that supports the pileus or cap of fungi.

Stolone (*stolo*); a creeping above-ground stem, producing roots at intervals.

Subterranean stems; underground stems, such as the corm, the tuber, &c.

Sucker (*surculus*); a branch produced from beneath the surface, and growing erect, when it emerges from the soil.

Suffruticose; sub-shrubby, that is, having branches of a woody texture, which perish annually either wholly or in part.

Surculus; the sucker; a branch produced beneath, but rising above the soil.

Tegmenta; the scales of the bud.

Trailing stem; a long slender stem, which neither twines, nor climbs, nor roots in the ground like the creeping stem, but spreads about on the surface of the soil.

Trunk (*truncus*); the principal stem of a tree.

Tuber; an annual, thickened subterranean stem, as the potato: *tuberculum* is a small tuber.

Tunic; the thin membranous scales that cover tunicated bulbs.

Tunicated bulb; a bulb covered with cohering outer membranous scales, as in the onion.

Turio; a stem partly developed, covered with scales, as the young stems of asparagus.

Twigs; ulterior ramifications of the roots and branches.

Twining stem; a slender stem which ascends by twining spirally round other plants, or surrounding objects: some twine from left to right, following the apparent motion of the sun; and others twist in a contrary direction.

Vimineus; slender, flexible.

Vine (*viticula*); a trailing stem which does not produce roots in ordinary cases.

Virgate; slender but less flexible than *vimineus.*

Viticulose; producing vines, or trailing stems.

Viviparous; increasing by buds falling from the stem.

Volubilis; twining, having the property of twisting round another body.

Wood; the principal bulk of the stem, lying intermediate between the bark and the pith.

THE BEET, AS A SUBSTITUTE FOR THE POTATO.

The deficiencies arising from the extensive failure of the potato crop in 1845 and 1846, and the uncertainty which hangs over that of future years, in consequence of mystery as to its cause, make it desirable that other plants, capable of supplying food to man, should to a certain extent be cultivated instead of the potato; at least by the poor, and those who at all depend on their garden produce. Many substitutes have been pointed out: among the rest, beet, carrots, parsnips, and turnips, among roots, have been suggested, while an increased amount of corn-crops of various kinds have been recommended.

Nothing appears likely to answer the purpose so well as the Beet-root. Rich in the elements of nutrition, it is particularly adapted to enter largely into the composition of bread; the roots, when properly cooked, form an excellent and nutritive vegetable; and the leaves *may* be used as spinach,—at all events they are excellent as fodder for cows, for sheep, and for pigs. The plant, too, is of easy cultivation; the crop is almost a certain one; and the seed is not costly at the outset.

To the cottager, then, and to the small holder, this crop may be strongly recommended; and such cultivators should also be recommended on the other hand, not to *depend* upon the potato, until at least the experience of a few more years has shown the "disease" to have passed away.

Compared with potatoes, the nutritive properties of beet-root would be represented by 1020, potatoes being 433; and in regard to useful produce of all kinds, the beet would be represented by 8330, potatoes being represented by 3480. In bulk, therefore, as well as in quality, the beet-root has greatly the advantage. A few hints on the cultivation and preparation of this crop for food, will not therefore be inopportune.

Varieties.—The common Beet (*Beta vulgaris*), has given rise to numerous varieties; some of which are regarded as garden roots, while others are preferred for field-culture; of the latter class are those varieties known as the mangold wurtzel, or field beet. Where the crop is grown with any view to the feeding of stock, this field-beet is to be preferred, on account of the bulk of its produce; which, under good management, is enormous; but, viewed simply as a garden crop, the garden varieties of the beet are preferable, being less coarse in texture, smaller in size, and therefore more convenient in a culinary point of view: probably there is little actual difference in the qualities of the garden and field beet, but in cases of this kind it is desirable to grow close solid roots of moderate size, in preference to larger ones; which are often hollow, and always inconvenient.

The following varieties are chiefly recommended:— for earliness, the turnip-rooted red Beet; for bulk of crop, the large-rooted red Beet, and the large yellow Beet; and for flavour, the dwarf red Beet, and the yellow Castlenaudari Beet. The first may be sown early, to meet present wants as soon as possible; the next will be the most profitable to grow for the purpose of mixing with flour to form bread; the others, more particularly where the roots are intended for cooking as a vegetable.

Culture.— A deep, rich, and somewhat sandy soil, is the most suited for the cultivation of the Beet-root. This should be deeply trenched, and well drained, besides having the advantage of good culture in other respects, to bring it to a free open texture. Such ground should be trenched, say two feet deep, in the early part of the winter. If the soil is not so deep as this, the subsoil is not to be brought up to cover the good soil; but simply broken up to that depth in the bottom of the trench. The rougher the ridges are laid the better, so that the frost may penetrate. During frosty weather, and the piercing winds of March, these ridges may be once or twice turned over to expose a fresh surface of the soil to the atmosphere. Whatever manure is applied, should be in a well decomposed state, and should be applied at the time of trenching, being then well mixed throughout the whole bulk of the soil. Fresh rank dung should never be applied. In the trenching, and the subsequent operations of forking over the soil, this one great object should be kept steadily in view, viz.:—to reduce the soil to a uniform fine tilth, no large rough unbroken clods being allowed to remain, and the large stones — where they exist — being removed.

By the latter end of March, or early in April, the first crop may be sown. Previous to this, the ground must be forked over again, the ridges being at this time levelled down, and all the large clods which remain being broken to pieces. Fine dry weather should be chosen for this operation, as it cannot be prosecuted fairly under other circumstances. The exact time of sowing must be regulated in some degree by the season: if the weather is inclement, and the spring naturally a backward one, the beginning of April will be soon enough; but if otherwise, the fourth week in March may be selected for the purpose. The seeds are to be sown in drills, drawn about two inches deep; the early variety being a small grower, one foot will be space enough between the rows; the seeds should be dropped two or three together at regular distances in the drills, about ten inches apart, only one plant being ultimately allowed to remain. After sowing, the seed is to be carefully covered over about one inch deep with fine soil. If the season be a dry one, the seed may be soaked in milk-warm water before sowing it, to assist germination; but if a wet one, this will not be necessary.

The main early sowing may be made after the middle of April, in the way above described; only for the larger sorts two feet must be allowed between the rows; and for the other intermediate varieties eighteen inches. For the large sorts, from twelve to fifteen inches may also be allowed in the row. The main sowing for winter storing, may be made about the beginning of May, in a similar way.

When the seeds have fairly germinated the surface of the ground should receive a deep hoeing, and at the same time, the plants should be thinned out, leaving one only—the strongest—of each patch. Blanks, if any should exist, may be filled up by *carefully* transplanting some of the supernumerary plants. The hoeing must be repeated *during fine dry weather*, at intervals of two or three weeks; and as the plants increase in size, the soil may be slightly drawn towards them. No other culture is required.

When the plants have attained considerable size, with a full head of leaves, part of the latter may be taken off for feeding live stock: it is a portion of the lower ones that may thus be removed, about a third in quantity of those on the plants; they are to be gathered off, not cut. The whole piece may be gathered from in this way; and subsequently, when an increase of growth has been made, the same process may be repeated once or twice. It must not be carried to excess.

The early sowing will have attained maturity in August, and will even have been fit for use much earlier. The roots may be used when they have attained a diameter of two or three inches, and have acquired some degree of solidity. Whatever of the crop may remain unused by the period of its maturity, may be taken up and stored for immediate use, the roots requiring to be lifted without being bruised, and the tops carefully twisted off above the crown. The roots may be slightly dried, and then stored away, among nd or earth, in a cool place. The other sowings, as they attain maturity, are to b similarly treated. The late crops are to b taken up about the end of October, in th same careful manner, and also stored amon some dry material, in a cool place, free fro frost; or buried in heaps of soil, as othe roots are kept.

The beets are sportive plants; it is therefore desirable to obtain and secure varieties o genuine character.

Preparation.—As a vegetable, the beet-root is cooked by boiling till it becomes perfectly tender; it is then nutritious and agreeable, having a somewhat sweet flavour, perhaps rather over sweet for some palates. Another mode is to bake them in the mould, as they are dug up or stored, or roast them in wood ashes; and some prefer this mode. But the best mode is to clean them without bruising, then to enclose them in a crust of flour and water, and bake them: when they are done the crust is removed. The roots must not be bruised, as this admits the escape of the juices; neither must they be laid in water, as this renders them insipid. When the leaves are used as spinach, they are to be gathered and boiled in the usual way.

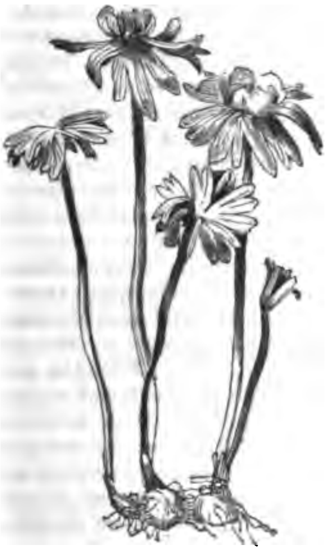
The most important domestic application of beet-root is that of entering into the composition of bread. In this country the experiment of mixing rasped red beet-root with equal quantities of flour, has been found to produce good bread, very similar to brown bread in taste and appearance. The pale-coloured sugar-beet would yield a whiter bread, of even better quality. The following is th formula which has been employed:—To one stone of Beet-root, boiled till it becomes soft, and well mashed, is added one stone (equal parts) of wheaten flour: the dough is then baked with yeast in the ordinary way. Th addition of half an ounce of bread soda, to on stone (14lbs.) of the dough, answers the purpose of yeast in making the bread light, wholesome, and nutritious. The same mixture i suitable for making griddle bread.

M. Payen, however, a distinguished chemi regards 33 per cent. of beet-root as the m convenient proportion in the compositio o bread; and his researches show that this mixture is *scarcely* inferior to pure wheaten brea in the amount of nitrogen it contains; nitroge being the chief nourishing principle of brea He states, that "in 100 parts of bread forme of 67 wheaten flour and 33 beet-root, and 10 parts formed of pure flour, the difference i this respect is considerably less than 1 p cent. (0,65)." This slight deficiency in nutritive qualities it is proposed to make good b the addition of a small quantity—not enoug to affect the palatableness of the bread—o beans or peas, both of which are rich in nitrogen; and according to this view, the following is the proportion recommended:—

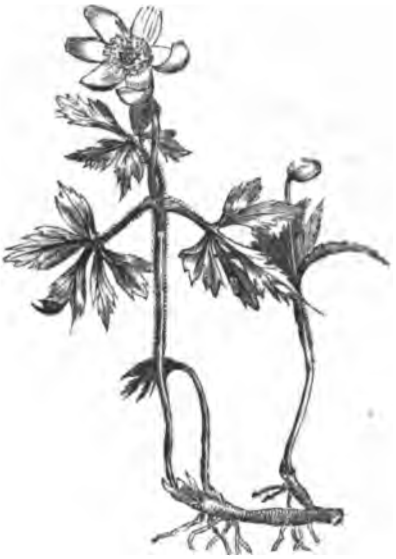
lbs.			lbs. of bread.
200	Wheat flour,	contain of nitrogen as much as	266
100	Beet-root,	,, ,,	21
31	Beans, or Peas,	,, ,,	28
			315

This calculation shows that the proportion thus recommended, represents, in the amount of nutritive properties, 315lbs. of bread, which is an important gain resulting from the admixture of beet-root and pulse.

The roots of the beet are also stated to be dried and ground, and sometimes used as "a supplement to coffee."



Eranthis hiemalis.



Anemone nemorosa.

WILD SPRING FLOWERS.

THE WINTER ACONITE.

The Winter Aconite belongs to the genus Eranthis, of which the following is the botanical character:—*Calyx* of five to eight petaloid deciduous sepals. *Petals small, tubular,* with a long claw, *two-lipped,* inner lip very short. *Capsules* numerous, many seeded, *stalked.*—The Winter Aconite (*E. hiemalis*) the only species, is a naturalized plant.

E. hiemalis, Salisbury (winter-flowering Eranthis, or Winter Aconite).—Root (rhizoma) tuberous; stem with two opposite sessile leaves just below the solitary flower; root leaves on long stalks, five to seven parted, deeply cut into linear-oblong segments; sepals six to eight, oblong. A small herbaceous perennial, hailed by every one as one of the earliest harbingers of spring, and well known by its cup-shaped solitary yellow flower, seated, as it were, upon a circlet of narrow leaves, but which in fact consists of a pair only of sessile leaves, each parted into narrow segments. The flowers are yellow; they grow from four to six inches high, seldom more. Flowers in February and March. Found naturalized in thickets in the south and other parts of England; by no means a true native.

It is of very simple culture, requiring only that the roots should not be too often disturbed. Miller says, "the roots may be taken up and transplanted any time after their leaves decay, which is generally by the beginning of June, till October; when they will begin to put out new fibres; but, as the roots are small and nearly of the colour of the ground, so if care is not taken to search them out, many will be left in the ground. These roots should be planted in small clusters, otherwise they will not make a good appearance, for single flowers scattered about the borders, of these small kinds, are scarce seen at a distance; but when these and the snowdrops are alternately planted in bunches, they will have a good effect, as they flower at the same time."

THE WILD ANEMONE.

The botanical character of the genus Anemone is as follows:—*Involucrum* of three cut leaves distant from the flower. *Calyx* petaloid, of many segments. *Corolla* wanting. *Carpels* inserted upon a thickened hemispherical or conical receptacle, not bursting, *tipped with persistent,* sometimes feathery styles. Four species are found in this country.

Anemone Pulsatilla, Linnæus (Pasque flower). — Leaves doubly pinnate, leaflets pinnatifid, with linear lobes; flowers solitary, erect, of six sepals; involucrum sessile, cut in deep linear segments; *carpels with feathery tails.* A herbaceous perennial, with the leaves all radical, hairy, doubly pinnated, and cut into narrow linear acute segments. The flowers each terminate a stalk about six inches high; they are of a violet-purple colour, and silky externally; the involucre is silky, and situated close to the flower, but by the elongation of the stalk becomes distant from the fruit; the sepals are linear oblong, united into a bell-shaped figure, spreading at the base, and recurved towards the point. The carpels are numerous, crowded, tapering into a long feathery awn. Flowers in April and May. Found in dry chalky and loamy pastures in various parts of England. This species of Anemone is a very handsome early border flower. Like most others of the genus, the plant is poisonous to cattle if eaten in quantity; this poisonous property resides in the acrid salt, called *anemonine,* which irritates and inflames the skin. Gerarde called it the Pasque-flower, from its flowering about Easter.

Anemone nemorosa, Linnæus (wood Anemone).—Leaves few, ternate with lanceolate leaflets; involucrum of three ternate (or quinate) leaves, similar to the root leaves; flowers solitary, of six elliptic sepals; *carpels* awnless, pubescent, *keeled.* A small but very beautiful herbaceous perennial, with a horizontal rhizoma, or root-like stem, and very few ternate leaves, with oblong, lanceolate, two or three cleft leaflets. The involucre consists of three petiolated leaves similar to the root leaves. The flowers each terminate a slender stalk, about three inches high, and consist of six oblong, or elliptic smooth sepals, white or pale pink. The carpels are numerous, obliquely ovate, compressed, and pointed with the persistent style. Flowers in April. Found rather plentifully in groves, thickets, woods, and shady banks. This is one of our earliest native flowers; and though rather small, is extremely pretty, either in its native groves, or under cultivation. In a cultivated state it becomes double from the change of the stamens into petals, a metamorphosis resulting from high cultivation, and often manifested in other plants. "The roots of this," says Miller, "may be taken up when their leaves decay, and transplanted in wildernesses, where they will thrive and increase greatly if they are not disturbed; and in the spring, before the trees are covered with leaves, they will have a very good effect, in covering of the ground, and making a pleasing variety at that season."

Anemone apennina, Linnæus (blue mountain Anemone).—Leaves few, ternate; involucrum of three ternate leaves, similar to the root leaves; flowers erect, solitary, of *numerous lanceolate sepals; carpels pointed,* awnless. A herbaceous perennial, of habit similar to the last, but differing most obviously in its flowers, which consist of numerous—twelve to eighteen—linear oblong obtuse segments, and are of a pretty light-blue colour. Flowers in April. Found in a few places in England, but regarded a very doubtful native. It is an exceedingly beautiful little plant, of rather larger size than *A. nemorosa.*

A. ranunculoides, Linnæus (yellow wood Anemone).—Leaves few, ternate, or quinate; involucrum ternate, cut; flowers solitary, or in pairs, of *five or six elliptic sepals; carpels pointed,* awnless. A herbaceous perennial with very much the general appearance of *A. nemorosa.* The root is similar; the leaves are ternate, often quinate, with oblong lanceolate leaflets; the involucre similar in form to the leaves. The flowers are solitary on a slender stem, and consist of five or six bright yellow sepals, which are somewhat pubescent externally; the carpels are not numerous, obliquely ovate, compressed, and pointed by the persistent style. Flowers in April. Found in one or two localities only in England, and regarded as a very doubtful native. It is, nevertheless, a very beautiful little plant for the garden, and contrasts well with the preceding species.

These wild forms of Anemones, no less than the garden ones, are worth cultivating for the sake of their early and lively flowers, which, however, in the case of *A. nemorosa* and *A. ranunculoides,* are most suitable for shady situations. Wherever there exists what is called a "wilderness," or a shrubbery, with walks passing through it, the wild Anemones should be largely planted, along with the winter aconite, the harebell, the snowdrop, and some others. They require no care in cultivation. Wherever they are introduced into more dressy garden scenes, it should be in a position where the roots may remain undisturbed from one season to another. Thus they may be planted along the margins of flower-beds, or borders, and will flower gaily in the spring, dying down and making room for other plants in the summer and autumn. For such positions the double-flowered variety is preferable. They may be planted in beds, where the roots can be so arranged as to leave space for other successional plants to come between them. The Pasque flower may be managed as an ordinary perennial.

CONIFERÆ.—THE PINUS, OR PINE-TREE.

The paper at p. 77, relating to Pine-trees, included that division of the genus Pinus, in which the species produce—usually—two of their needle-shaped leaves within each of the scaly sheaths peculiar to the foliage of these plants. The species here described, are those which produce three leaves in a sheath. There is still another group, which have the leaves arranged in bundles of five together.

Pinus serotina.

*** *Leaves three in a sheath.*

a. Scales of cones spineless at apex.

Pinus sinensis, Lambert (Chinese Pine).—Leaves three in a sheath; in some instances, two together, of the colour of those of the stone pine; five inches long, very slender, serrulated, semicylindrical. Sheaths cylindrical, half an inch long. Cones two to three inches long, almost sessile, ovate, brown, with thick flattened truncate scales. Buds without resin.

A native of China, where it rises to a large tree. Professor Royle considers it as a variety only of the *Pinus Pinaster*, and that it is identical with the pine found on the Khoosea Hills. In the garden of Mr. Wells, of Redleaf, and at Carclew, in Cornwall, are the finest specimens in England. It is by no means well suited to the climate of Britain; but its constitution might be somewhat improved by grafting on *P. sylvestris*.

Pinus canariensis, C. Smith (Canary Pine).—Leaves three, rough-edged, seven inches long, slender, wavy, grass-green. Buds one quarter inch long, scaly, of a whitish colour, and free from resin. Cones oblong, five or six inches in length, with thick woody scales, truncate.

A gigantic tree rising amidst the desolation of nature on the vexed soil of Teneriffe. It takes its station about 5000 feet above the level of the sea, much higher than "the region of laurels," in the midst of loose rocks, masses of lava, and terrific precipices. In this tree is perceived a beautiful adaptation of nature in working out the sublime. The plant is of a bold, almost savage outline, with great sinewy arms, and is admirably fitted, along with other striking accompaniments, to "conquer the mind" of the beholder. Unfortunately, however, it assumes not this commanding character in England, for so far as it has been tried, it has shrunk from the severity of the climate. The wood is represented as resinous, not subject to the attacks of worms, and lasting for many centuries. A fine specimen stands in the pinetum at Dropmore, and there are also trees of this species in the Hackney nursery, and in the garden of the Horticultural Society. Those who have cuttings, should graft them on *P. sylvestris*.

Pinus insignis, Douglas (noble Pine).—Leaves generally three, sometimes four, wavy, irregularly arranged, grass-green, and about three inches long. Buds one quarter inch long, free from resin, resembling those of *P. Sabiniana*. Cones bright brown, ovate, with depressed scales, the lowermost hooked back.

A beautiful tree, having bright grass-green leaves, differing from every other species known in England. Introduced by Douglas, in 1833. In the Horticultural Society's Garden, the Hackney Arboretum, and at Belsay, in Northumberland, Hendon Rectory, and Chatsworth, are good specimens. It is a free grower, but rather too tender for the climate of Britain. Nevertheless, it should be in every collection; and to obviate the high price charged for it, (1*l.* 1*s.*,) slips should be grafted on the *P. sylvestris*. Mr. Locke, of Rozelle, Ayrshire, says, "Of all the most ornamental pines, this is the most striking here: the foliage is of a beautiful delicate green, the plant making sometimes two shoots in a season, yet never injured by frost. The annual growths average three feet; therefore, whether it be a valuable timber tree or not, it is certainly an object of much interest as an ornament in the pleasure-ground. All our plants, though quite exposed in winter, have never been injured in any way."

Pinus Teocote, Schiede (Ocote Pine).—Leaves three, light green, scabrous, wavy. Cones smooth, ovate, with angular blunt scales; in shape, like those of *P. sylvestris.*

A lofty tree, growing on Mount Orizaba, in Mexico, and introduced by the late Mr. Lambert, of Boyton, where the only fine specimen in this country is to be seen. The species succeeds well in Scotland; thriving plants being found both at Rozelle and Ballindalloch. The properties of the timber of this tree are as yet unknown. Its ornamental character is admitted on all hands; but it is difficult to be had even in the first nurseries. From the altitude of its native habitat, it will, in all probability, withstand our winters without injury.

Pinus cembroides, Zuccarini (Cembra-like Pine).—Leaves in threes, from an inch to an inch and a half long, rigid, and of a light green colour. Cones, stalkless, and growing singly, from two to three inches long, and nearly two inches broad at the base, with six or seven rows of scales, rounded at the margin, and enclosing two wingless top-shaped seeds. The branches grow in whorls, mostly five together, but sometimes more numerous; they are slender, and slightly incurved, have tolerably smooth bark, and remarkably small buds, nearly, or quite without resin.

A low growing handsome tree of about thirty feet high, with much the general appearance and foliage of *P. Llaveana*, with which the late Mr. Loudon identified it. It is, however, a very different, and perfectly new plant, having much smaller leaves, and cones three or four times larger. The plant has recently been raised by the Horticultural Society from seeds, collected by Mr. Hartweg, on the cold districts of the mountain Orizaba, at an elevation of 10,000 feet above the sea. There is little doubt of this plant proving to be perfectly hardy in our gardens, as its habitat on the cold elevated tracks of Orizaba would seem to indicate.

Pinus Llaveana, Schiede (La Llave's Pine).—Leaves generally in threes, often in twos, sometimes in fours, short, narrow, twisted, glaucous, and tufted. Cones two inches and a quarter long, with three rows of prominent obtuse scales. Seeds large and eatable. Buds very small.

A handsome low tree, growing twenty or thirty feet high, found in the mountain forests of Mexico, between Zimapan and Real del Oro. It is perfectly hardy in England. According to Mr. Loudon, there is a good specimen of it in the Arboretum at Chiswick, and that author recommends its being grafted on *P. halepensis*, to which it bears a resemblance.

Pinus patula, Schiede (spreading-leaved Pine).—Leaves in threes, recurved and spreading, slender, of a soft light green, about seven inches long, the margins serrated. Cones polished, ovate-oblong, four inches long, with angular truncated scales, prominent, yet small.

A lofty tree, found on high mountains in the northern provinces of Mexico, and giving every promise of being useful and ornamental in this country. The finest plant in Britain is at Boyton, the seat of Mr. Lambert, and it is also to be seen at Rozelle, in Ayrshire, six feet in height. It is there considered a "lovely" pine.

b. Scales of cones spiny at apex.

Pinus australis, Michaux (southern Pine).—The leaves three in a sheath, eight inches long, grass-green, in clusters at the tip of the branches. Buds half an inch long, and without resin. Cones about eight inches long, and two and a half inches broad at the widest part, ovate-oblong; scales depressed, armed with small prickles.

The synonymes of this tree are numerous: the following are its most common designations:—*P. palustris*, *P. serotina*, and *P. americana palustris.* Throughout America, it is known as the pitch pine, yellow pine, long-leaved pine, broom pine, and red pine: the timber merchants of Britain call it the Georgia Pitch Pine.

One of the finest timber trees of America, producing strong, compact, and durable wood; and well known to the British timber merchant. The species has been cultivated in England for upwards of a century, yet it is by no means common in arboretums, and much less so in plantations. In the treatment of this tree, two very important points seem to have been overlooked, and the writer has the greatest confidence in recommending them to the notice of British arboriculturists. 1st. The tree will, in all probability, succeed along the sea shore, it being found in maritime situations in its native country. The sea air checks the intensity of frost, against which, in inland situations, it is certainly unable to bear up. 2dly. The soil in which it is planted should be little better than that which lies on the sea-beach, the universal objection to the plant being, that it produces more wood than it can mature or ripen. Thus Mr. Locke, of Rozelle, speaking of this species, says, "the severity of the winter destroys the half-ripened wood." Tracing the tree over its original habitations, it is very evident that it is especially fitted for the most barren tracts that can be found. The remarks of Michaux on this head are particularly worthy of attention. "Towards the north," he says, "the long-leaved pine first makes its appearance near Norfolk, in Virginia, where the pine barrens begin. *It seems to be especially assigned to dry sandy soils;* and it is found, almost without interruption, in the lower part of the Carolinas, Georgia, and the Floridas, over a tract of more than 600 miles long from north-east to south-west, and more than 100 miles broad from the sea towards the mountains of the Carolinas and Georgia. Where it begins to show itself towards the river Nuse, it is united with the Loblolly pine (*Pinus Tæda*), the yellow pine (*P. mitis*), the pond pine (*P. serotina*), the black jack oak (*Quercus nigra*), and the scrub oak (*Q. Bannisteri*): but, immediately beyond Raleigh, it holds almost exclusive possession of the soil, and is seen in company with the pines just mentioned, only on the edges of the swamps enclosed in the barrens; even there, not more than one tree in a hundred is of another species. With this exception, the long-leaved pine forms the unbroken mass of woods which covers this extensive country; but, between Fayetteville and Wilmington, in North Carolina, the scrub oak is found in some districts, mixed with it in the barrens; and *except this species of pine*, it is the only tree capable of subsisting *on so dry and sterile a soil.*"

In Georgia, the Carolinas, and Floridas, almost all the houses are built of it; and in the southern states it is used to the exclusion of all others in ship-building. It commands a much higher price in the British and West Indian markets than the other pines of the United States, and with the exception perhaps of *P. Strobus*, it would be difficult to select any other tree which has contributed so much to the comfort and convenience of man throughout the civilized world. Plants are 3*s.* 6*d.* each.

Variety.—*P. a. excelsa*, a plant raised by Mr. Booth, of the Flötbeck nurseries, in 1830, much hardier than the species, and considered to be a more rapid grower. It is not yet common in collections.

Pinus Tæda, Linnæus (Frankincense, or Loblolly Pine).—Leaves in threes, five and a half inches long, narrow, bluntly pointed, channeled in the middle, nearly straight. Cones somewhat curved, four inches long, with compressed scales, woody, and armed with a sharp point, often in pairs, oblong-pyramidal. Buds of a brownish red, covered with resinous exudation.

A tree growing to the height of 90 feet, in barren sandy districts from Florida to Virginia. Sent from America to Mr. Ball of Exeter, and to Dr. Compton, bishop of London, about the beginning of the eighteenth century. The tree grows rapidly, with loose annual layers, and it is consequently of little value. The nature of the soil, however, influences the quality of the wood; and on poor exposed districts its timber is of a closer fibre. Compared with *P. australis*, its concentric circles are as 1 to 12 in the same space, so that in bulk of wood, it furnishes itself twelve times faster than the other. Pursh says, that "all the woods in the southern states of America must be thickly seeded with it; for no sooner are lands which are exhausted abandoned, than they are overrun with young trees of this species." One of the handsomest trees in Europe is at Paine's Hill, and there are good specimens at Syon, Whitton, and Kew. Generally, it does not grow well in Britain. Probably it might thrive better on dry sandy soils near to the sea. Plants in the London nurseries are about 2*s.* 6*d.* each.

A variety, under the name of *P. T. alopecuroidea*, is found in some catalogues; but judging from the tree in the Horticultural Society's Garden, it differs not from the species.

Pinus serotina, Michaux (late, or Pond Pine).—Leaves three, six inches long. Cones from two and a half to three inches long, broad, egg-shaped. Scales broad, depressed at the apex, terminating in a slender prickle, which is easily broken off.

A small tree only, growing to the height of 40 feet, on the edges of ponds and swamps from New Jersey to Carolina, attaining to its greatest size towards maritime situations. The timber is altogether worthless, unless for firewood; but as an ornament it is well worthy of a place in every pinetum. It seems to grow best in soil which has one-half bog earth in it, and which is moist. There is a tree at Dropmore about 40 feet high.

Pinus rigida, Miller (rigid or Pitch Pine).—Leaves in threes, four inches long, variable. Cones ovate, clustered, almost sessile, with rugged compressed pyramidal scales, ending in a prickle. Trunk lofty, straight.

A large tree, found throughout most parts of the United States, growing in some instances to the height of 80 feet; but varying very much both in its appearance and altitude according to the soil which it may happen to affect. When the trees are in masses, the cones grow singly, shedding their seeds the first autumn after they are ripe; but on isolated trees, the cones are in clusters of four or five, and remain on the trees unopened for several years. On good soil, the concentric circles of the wood are distant; but on poor exposed situations, the wood produced is compact and full of resin, as its name of *pitch-pine* imports. It is sometimes used in house-building, and especially for flooring, the resin with which it is imbued rendering it durable. Its chief use is to furnish tar, of which large quantities are made from it. Dropmore, Hackney Arboretum, Carclew in Cornwall, and Hendon, are the places in this country where it is to be seen in greatest perfection.

Pinus ponderosa, Douglas (heavy-wooded Pine).—Leaves three together, thickly set, one foot long, nearly straight, and in short sheaths of a dark colour. Cones egg-shaped, oblong, with strong pyramidal scales, terminating in a recurved spine. Buds one inch in length, reddish-brown, covered with fine particles of resin.

A tree discovered by Douglas on the coast of North America, and one full of promise to the British arboriculturist. This is a beautifully-shaped, fast-growing, noble object, with few well-regulated branches; which, when old, assume a graceful drooping habit. Of the character of its wood, the discoverer has said nothing; and in this respect it, in all probability, partakes of that looseness of fibre characteristic of the great majority of North American pines. At the same time, its specific name would imply the very reverse, and the question remains to be ascertained. Of its success in the climate of Scotland, the writer can speak with certainty. Plants of it in the more exposed districts of Morayshire, grow at the rate of two and a half feet in one season; and at Rozelle in Ayrshire, "everything connected with it supports the hypothesis, that it will ultimately prove a very valuable timber tree" in that country. The specimens there are upwards of 20 feet in height, carrying with them proportionate strength both in stem and branches. A very general objection is urged against this tree, that of its being unable to support itself when finally planted out. The objection is misapplied: it belongs to the nursery culture of the tree, and not to any peculiarity in the plant itself. Pot-culture is a good enough plan, and quite indispensable; but it has its limits, which are frequently overstepped. Such a pine as this should not be kept in pots beyond three years, when it should be turned into the open ground, and subjected to a course of shifting every two years. Its removal every two years would compel it to furnish itself with properly directed leading roots, and with an abundance of small fibres, which would not fail to support it, when placed in an exposed situation for life. Plants are from 5*s*. to 10*s*. each; and at this rate, planters are surely entitled to have such as are well-rooted.

Pinus Coulteri, Don (Coulter's, or great hooked Pine).—Leaves three, ten inches long, slightly serrated on the margin, glaucous, two-furrowed on the upper side. Cones solitary, oblong, very large, with woody wedge-shaped horned scales, each one weighing about 3½ lbs. Seeds flat, brownish, rather more than half an inch in length. Young shoots covered with a violet-coloured glaucous bloom.

A lofty tree discovered by Dr. Coulter and by Douglas, about 1831, growing on the mountains of Santa Lucia, "in latitude 36 degrees, within sight of the sea, and at an elevation of from 3000 feet to 4000 feet above its level." It was found along with *P. Lambertiana*, rising to 80 feet and 100 feet in height, having a trunk about 3½ feet in diameter, with thick roaming branches. It is altogether so like the next pine here described, that many botanists have considered them varieties only of the same species. The foliage of this tree is a little more fastigiate; but the buds, leaves, and young shoots are exactly alike. The cones are larger than those in Sabine's variety or species; and what is rather unusual, the seeds are smaller. It forms a gigantic and lovely tree, quite a prize in the eyes of every arboriculturist, is a quick grower, and perfectly hardy even in the climate of Scotland. When grafted or inarched on any other species, the junction should be made as near to the root as possible, and the bottom of the graft fretted or cut so as to induce it to throw out roots for itself. It is cruel to plant such a tree on soil which is not loosened and prepared to the depth at least of 3 feet. There are good specimens at Kew, Hendon Rectory, and the Horticultural Society's Garden.

Pinus Sabiniana, Douglas (Sabine's, or great prickly-coned Pine).—Leaves three, one foot in length, glaucous in every stage of their growth; sharp and round on the outside, and towards the point serrated. Sheaths one inch long, ash-brown, ringed. Cones surrounding the stem like those of *P. Pinaster*, remaining on the trees for several years, about 11 inches long, roundish ovate, with large scales bearing sharp incurved points like a hawk's bill.

A tree discovered by Douglas, in 1826, and named by him in compliment to his friend, Mr. Sabine. Found in greatest perfection on the deep vegetable deposits on the flanks of the Cordilleras of New Albion, in California; where it attains the height of 130 feet, and when standing alone, is feathered to the ground with branches. Plants were raised in the Horticultural Society's Garden in 1832; and in the arboretum there, is one of the finest specimens in England. In Scotland it is as hardy as any other pine, and promises to be one of those which will be extensively cultivated for ornament. Seedling plants are not yet common in nurseries, and grafted plants do not appear to grow well. Mr. Locke of Rozelle, Ayrshire, says, "Of this excellent and scarce pine we have several specimens; but unfortunately, until very lately, we were unable to procure a seedling plant, and therefore this report of it must refer to grafted plants only. One of our plants, however, about two years since, having shown signs of roots at the junction of the graft with the stock, I had the curiosity to try to bring the roots into the soil, by drawing a little leaf-mould and sand around the plant. I am happy to say, I have been well rewarded; for the soil is now filled with roots, and the tree is thriving exceedingly. This pine approaches nearer to the *Pinus ponderosa* than any other I know. It is perfectly hardy here, and is now making growth annually about 18 inches in length." The wood of this pine is white and soft, and not likely to be very durable.

Pinus longifolia, Roxburgh (long-leaved Indian Pine).—Leaves three together, about a foot in length, but varying in some instances from eight to eighteen inches, drooping, slender, of a vivid green, channelled, and serrated. Cones less than half the length of the leaves, oblong-ovate, rugged, dark brown, with corky recurved scales.

A native of North Hindostan, on the mountains of Nepal, and on the great range of the Himalayas, which bounds that kingdom. It is cultivated throughout Upper India on account of the peculiar gracefulness of its habit. The tree affects various localities, being found on high mountains, and in valleys where the heat is intense. Hence a majority of the plants of this species raised in Britain are too tender for this climate; whilst others are nearly hardy enough to withstand the rigours of our winters. In some parts of the Himalayas this tree attains to the height of 100 feet, having a few short branches which become drooping. Lawson suggests, and with reason, that if seeds were gathered from those trees on the Himalaya only, the plants produced would, in all probability, prove hardy enough to grow in this country without protection. Plants in the London nurseries are from 10*s.* to 15*s.* each.

Variety.—*P. l. Timoriensis*, Loudon.—So called on account of its having been sent from Timor, one of the Molucca Islands, to Mr. Lambert at Boyton. Leaves three, rather more slender than *P. longifolia*, of a darker green, eight inches long. There is a tree upwards of twenty feet high at Boyton, but, so far as the writer knows, it has not yet borne cones, and its reference to *P. longifolia* wants confirmation.

Pinus Gerardiana, Wallich (Gerard's, or short-leaved Nepal Pine). —Leaves three, short, straight, glaucous, with deciduous sheaths. Cones like those of *P. longifolia*. Seeds dark brown, pointed at both ends, and eatable.

A large conical-crowned tree, discovered by Captain Gerard, of the Bengal Native Infantry, and named in honour of him, by Dr. Wallich. It has been often confounded with *P. longifolia*, and seeds have in some instances been sent home, which have turned out to be *P. Pinea*. In the Fulham nursery, and at Messrs. Low's, at Clapton, plants of the true species are propagated; and at Flitwick in Bedfordshire, Elvaston Castle in Derbyshire, and Hendon Rectory in Middlesex, there are fine specimens many years planted. From its being a native of the coldest parts of the Himalayas, and the bleakest side of those mountains, little doubt is entertained of its hardiness in the climate of Britain. In Scotland it gives promise of withstanding the winters without protection.

Pinus californiana, Loiseleur (Californian Pine).—Leaves generally three together, sometimes only two, three inches long, slender, deep green. Cone in form and appearance like that of *P. Pinaster*, but considerably larger.

A scarce species found in the neighbourhood of Monte-Rey in California, and represented to bear cones somewhat similar to the *P. Pinaster*, but in every respect larger. One of the few specimens in this country, is in the garden of the Horticultural Society, a grafted plant, under the name of *P. montheragensis*, received from M. Godefroy, a nurseryman in Paris, about the year 1829. Professor Thouin thus describes it:—

"This tree grows in the neighbourhood of Monte-Rey. One of its cones, gathered by Colladon, the gardener belonging to the expedition of La Peyrouse, was sent to the museum of Natural History in Paris, in 1787. The cone was in the form of that of *P. Pinaster*, but one-third larger in all its parts. Under each of the scales were found two seeds of the size of those of *P. Cembra*, and of which the kernel was good to eat. From these seeds, sown in the Jardin des Plantes, a plant was raised, which has stood for several years in the open ground; where, without being vigorous, it remains in health." It is not suited to the climate of this country.

Pinus Fraseri, Loddiges (Fraser's Pine). —In all probability a mere nominal species, referable to *P. rigida*. It is found in several nurserymen's catalogues, and was originally sent from the Liverpool Botanic Garden. A fine specimen, from 15ft. to 20ft. high, is said to be in the arboretum of the Hackney nursery.

Pinus muricata, Don (smaller prickly, coned Pine).—Leaves not seen by the writer, but supposed by Don to be in threes. Cones in clusters, unequally sided, three inches long, ovate. Scales flattened at the top, wedge-shaped, mucronate or sharp-pointed.

Represented to be a middle-sized tree, a native of San Luis in California, growing about 3000 feet above the level of the sea, and very likely to prove hardy in the climate of Britain. A cone is figured in *Loudon's Arboretum Britannicum*, p. 2269; but no plants are as yet known to be in England. A straight stunted tree not exceeding 40 feet in height.

Pinus tuberculata, Don, (tuberculated Pine).—This species is described by Don as reaching to the height of 100 feet. Cones three in a cluster, of a tawny grey, 4 inches long, 2½ inches broad, the scales being wedge-shaped, dilated at the apex, quadrangular, truncate, with a depressed umbilicus; larger at the external base, conical, with an elevated apex. Found by Dr. Coulter along with the next species here described, (*P. radiata*,) which it resembles in size and habit, but is essentially distinguished by the form of its cones. See *Linnean Transactions*, vol. xvii. p. 442. The specimen leaves of this tree were not to be found when the cones arrived in this country, Dr. Coulter having had "no convenient opportunity to arrange his vast collections."

Pinus radiata, Don (radiated scaled Pine). —Leaves thought to be in threes. Cones ovate, with unequal sides. Scales radiately cleft, truncate, with a depressed umbilicus; gibbous, somewhat recurved, and three times as large at their external base.

"Found by Dr. Coulter, about Monte-Rey, in latitude 36°, near the level of the sea, and growing almost close to the beach. The trees grow singly, and reach the height of 100 feet, with a straight trunk, feathered with branches almost to the ground. This species affords excellent timber, which is very tough, and admirably adapted for building boats, for which purpose it is much used."—*D. Don, in Linnean Society's Transactions*, vol. xvii. p. 442.

The preceding section contains several new and untried species of pines. Those from California are particularly interesting; and there is no doubt that the botanist now (1847) exploring that country, under the auspices of the London Horticultural Society, will be able to make further additions to this magnificent genus. The lamented Douglas laboured successfully in this field; yet it appears that Dr. Coulter, who succeeded him, was equally if not more fortunate, in introducing several of the same family. "The soil and climate of those regions, especially the western flanks of the northern Andes, and the extensive parallel ranges of mountains which extend from south to north through California, appear to be peculiarly favourable to the development and growth of the fir tribe," and it may therefore be expected that Mr. Hartweg's labours will not be in vain.

Some of the species are remarkable for their rapid growth, and are well fitted to take the place of our fast growing deciduous plants, such as poplars and willows. The chief of these appears to be *P. ponderosa*, which, when favourably situated, proceeds at the rate of three feet per annum.

In this section are several individuals valuable on account of the timber which they produce, and no less so as a contribution to our parks and pleasure-grounds simply as ornaments. The voice of the past has not indeed directed us to those objects, for they appear to have grown up in their vast habitations almost unnoticed and unhonoured; but, judging from the character they have already exhibited in this country, the future will be more eloquent in their praise.

The writer has had abundant evidence of the fact, with regard to our recently introduced Coniferæ, that the deep trenching of the soil in which they are planted, is a powerful inducement to reconcile themselves to the climate of Britain. As already observed, one of the best models of planting was executed by the late Sir Thomas Fowell Buxton, who had upwards of one hundred acres of poor land trenched and filled with fine pines, &c., in the parishes of Runton and Trimingham, Norfolk. There our scarcest and most expensive species are thriving almost as well as those which have been long inured to the climate; and there is little doubt but that this has been accomplished chiefly by the thorough loosening of the sub-soil. *The poorness of the soil is of very little consequence to pines*, so long as their spongioles can descend freely in search of support. In fact, there is no race of trees so well suited as the present family, to cover tracts of sandy soil, which are intuitively regarded as being of a barren nature. In such situations, however, the breaking up and loosening of the subsoil is of much importance to their success. Where iron exists in any quantity in soils of this kind, which have for many years been suffered to lie waste, a cake or "pan" is formed by the uniting of vegetable acids with the particles of iron, and the pan of iron conglomerate thus formed, not only prevents the roots from obtaining firm hold of the soil, but also prevents the downward passage of water; it is, therefore, of great importance that where it exists within three feet of the surface, it should be broken up.

BASS FOR TYING PLANTS.

THE bass, or material of which the garden (Russian) mats are formed, is commonly used for all the lighter tying which is necessary in gardens. This bass is the inner layers of the bark of the lime-tree (*Tilia europæa*). The bark of lime-trees grown in this country is nearly or quite equal to the Russian. To obtain it, the timber, after being cut, must be laid up for twelve months, in a dry place, and the bark may then be stripped off; the inner layers being suitable for fine tying; the outer layers are coarser, and serve for strong rough tying. During 1846, attention was directed to another kind of bass, called Cuba Bass, from being commonly sent around packages of cigars which come from thence. This is now introduced for gardening purposes; it is full of long narrow meshes, or openings, somewhat resembling lace, and is brought over in long ribbon-like strips; it is rather stubborn in texture, but very strong, and splitting readily into narrow portions, thus being suitable either for strong or light ties. It is not known by what tree it is produced. Another material of this kind has been recently exhibited at a meeting of the Horticultural Society. This is found in Madagascar, where it is used by the natives in making ropes, in which state it has sometimes reached England. It is said to be the produce of a "grass-tree," and has the appearance of being the long narrow foliage of some such plant; but what plant it is which produces it is as yet unknown. This occurs in long strips, much narrower, apparently, than the Cuba Bass; it is very soft and fine, and remarkably tough, it being difficult to break even a very thin piece of it; it splits readily into fine strands, and will, therefore, be exceedingly well adapted for all fine tying, being light and fine, as well as strong; and in thicker pieces, or two or three together, will make a very strong coarse tie. A supply of it is likely to be obtained for garden purposes. It is by far the best material of the kind that has yet been brought into notice.

THE ÆSCHYNANTHUS.

ONE of the most ornamental families of tropical plants, is that which bears the scientific name *Æschynanthus*, a word derived from *aischuno* (to be ashamed,) and *anthos* (a flower,) and for which the Anglicised equivalent of Blushwort has been proposed by Dr. Lindley. This latter term is not, however, generally adopted; names of this latter character—that is, trivial names—not being very extensively employed, on account of their inconvenience and want of preciseness for scientific purposes, and the little real utility attending their use, as far as unscientific persons are concerned. The name Æschynanthus has also been proposed to be adapted to our language by a modification of the last syllable; thus we have Æschynanth, which in the plural form becomes Æschynanths.

The Æschynanths belong to a group of plants, to which the term Cyrtandraceæ has been applied. This group is by some regarded as a distinct order in the so-called Natural System of Botany, while by others it is considered as a subordinate group of the natural order Gesneraceæ. The difference in these views is more apparent than real, and results principally from those holding the latter opinion taking a more comprehensive view than the others, of what constitutes the limits of a natural order. Illustrating this by a familiar example, we may say that the actual geographical position of London would be undisturbed, whether it were regarded as a distinct county, or part of the county of Middlesex; and in like manner, the botanical position of Æschynanthus is unaffected whether Cyrtandraceæ, the group of plants in which it is included, is regarded as a separate order, or a section of the larger order Gesneraceæ.

All the Æschynanths are epiphytal plants, that is, they are found growing in the same way as the orchids, upon the trees of tropical forests. These all differ from parasites, such as the mistletoe, which draws nourishment from the tree on which it grows; epiphytes, on the contrary, derive nothing but a location from the trees to which they are found attached, and derive their nourishment from the moisture and gaseous elements of the air which surrounds them, and from the decaying vegetable matter which may have lodged upon the branches where they are fixed. From this similarity in habit and general character, the Æschynanths and orchids associate well together in artificial cultivation.

The plants under consideration may be grown, either attached to blocks of wood, or planted in open baskets, such as are used for orchids, or potted with very loose open material about their roots. In the former case, the blocks should be charred before the plants are fixed to them, and the roots should be neatly enveloped with sphagnum moss, placed beneath and above them, and fastened on to the block by means of fine zinc or copper wire fastened to copper tacks; a small tack is also to be securely driven into each end of the block, to which a piece of wire is attached, as a handle for the purpose of suspending it from the roof of the house. In this case, the moss is to be kept moistened by occasional syringing. If the plants are placed in open baskets, they should be planted amongst lumps of charcoal, and turfy portions of peat soil, about the size of walnuts, mixed with sphagnum moss cut moderately fine, and a little leaf-mould; and this material must be placed together loosely in the baskets; the plants should be planted rather shallow. When the baskets are made of wire, either copper or the galvanized iron wire should be used, as the common iron wire soon corrodes. Of wooden baskets, those formed of bamboo rods are the neatest, and most durable; but if this material is not available, such as oak or hazel rods will do, but they are the better for being slightly charred, as this prevents their rapid decay. When they are grown in pots, a soil similar to that recommended for baskets must be employed, and the pots must be well drained, thus:—a smaller pot nearly as large as can be got to stand in the bottom, is to be inverted in the larger pot, and around this pieces of broken crock, or charcoal, or both mixed, are to be filled in nearly level with the inverted pots; on this, the soil and the plants, potted rather high, are to be placed. Young plants may be raised in the spring, and are best kept in pots, potted in soil similar to that already recommended, but made a little finer to suit the size of the pots they are growing in, and with the addition of a portion of rotten wood. When they are well established, or by the following March, they can be transferred either to the blocks, baskets, or to larger pots for blooming: in either case the old soil should be removed from about their roots, and carefully replaced by some in a fresh state. When grown permanently in pots, the plants may be fastened to a rough block of wood, and this placed in the pot, and filled round with the materials already named. We have seen them grown very successfully, managed in this way. When the plan of growing them attached to blocks of wood is preferred, the plants require dressing before they are excited to grow each year; the old moss should in great part be removed from the roots, and replaced by fresh; any decaying roots or branches should be cut away, and in case there may be any straggling shoots which destroy the symmetry of the plants, this is the proper period to remove or cut them back.

Sometimes the walls of the orchid house or stove are covered over with plants, or in other cases there exists a portion of rustic work, or rock work within the house; for such situations, the Æschynanths would be exceedingly appropriate, and under such circumstances they would have a fine effect; in this case, their branches would be allowed to hang in their natural character, entirely without restraint. When introduced in this way, they should be attached to large pieces of rough bark fastened to the wall or rock, and may be supplied with a small portion of sphagnum moss.

The natural habit of these plants is dependent, and they look best when allowed to assume this habit unrestrainedly, for then the branches hang over and conceal the pots or baskets in which they are growing, and the position assumed by the flowers has a more natural and elegant appearance than under any other arrangement. This plan is, however, inconvenient in the case of large plants, when it is required to remove them from one place to another; and hence, when they are in pots, the branches are sometimes disposed over a roundish trellis, and when they are not too rigidly trained in, they look very well in this way: sometimes also, they are slightly supported by a few stakes, and made to form the outline of a dense bush; and when grown in this way, if the points of the young shoot have their liberty, so as to fall into something like their natural curves, the effect is very good; those kinds which possess the most decidedly branching habit are most proper for this mode of training.

The orchid house, or where there is no such place, the stove, or stove pit, is the proper habitation of the Æschynanths. The conditions which are kept up in an orchid house, viz. vigorous heat and abundant atmospheric moisture without exposure to cold draughts, exactly suit them when in a growing state. In the summer, when they are blooming freely, they may be kept in a somewhat drier atmosphere, such as a warm greenhouse, which would be very suitable for them then; and in the winter, when they are in a state of inactivity, they may be kept comparatively dry, and in a cool part of the stove, or even in a good greenhouse. In the growing season they should be syringed with tepid water once or twice a day, and kept moderately moist at the root; and when in bloom and removed to a drier atmosphere, they must be kept regularly supplied with water. In removing them at this period of their development, the change must not be too suddenly brought on them, but by degrees.

All the species propagate readily by means of cuttings planted in sandy peat soil, and plunged in a gentle bottom heat. When young the plants should be freely stopped to secure a proper number of branches to form a handsome plant.

In no genus has there been such an accession of new and beautiful species during the past year as in the Æschynanthus, and with these additions it offers a very tempting inducement to amateur cultivators who delight in taking up and patronising particular fancy genera. There seems no reason why hybridising should fail in this case, any more than in others, to produce a greater variety than the wild exotic species afford.

The following is a connected view of the kinds which are now in cultivation in this country; and it may be remarked that the first three which are named are often confounded in gardens:—

Æschynanthus ramosissimus, Wallich (much branching Blushwort or Æschynanth).—A shrubby sub-scandent branching plant, with opposite elliptic oblong pointed leaves of a fleshy (as in all the species) substance, and terminal crowded umbels of flowers; the flowers are tubular and curved (as in the whole genus,) divided at the end into five unequal lobes, about an inch long, and of a rich orange-scarlet colour. It is found in the woods of Nepal, growing on the branches of the trees. The date of its introduction is unknown. Flowers from March to July.

Æschynanthus grandiflorus, Lindley (large flowered Blushwort).—A shrubby plant, of branching habit, with opposite elongated lance-shaped leaves, fleshy, and usually toothed at the margin, and bearing terminal many-flowered umbels of flowers; the flowers are curved and tubular, swollen at the base, and with five roundish lobes; they are about an inch and a half long, and of a rich orange red, and downy on the outside. It is found in Sylhet and in Bengal, and probably in other parts of the East Indies, growing on trees. Introduced in 1837. Flowers from August to December. It is the *Æ. parasitica* (Wallich); *Incarvillea parasitica* (Roxburgh;) and *Trichosporum grandiflorum* (Don).

Æschynanthus maculatus, Lindley (spotted Blushwort).—A branching shrubby plant, with opposite lance-shaped, pointed, somewhat toothed, fleshy leaves, spotted beneath, and bearing terminal umbels of flowers; the flowers are large, somewhat pubescent, club shaped, with five obtuse nearly equal lobes, the tubular part deep scarlet, and the lobes yellowish with black streaks. It is found in moist shady woods, also on the Khoseea hills, at a considerable elevation above the sea. Introduced prior to 1837. Flowers from March to July. This sometimes bears the name of *Æ. ramosissima* in gardens.

Æschynanthus purpurascens, Hasskarl (purplish green Blushwort).—A straggling branched shrubby plant, with opposite oblong lance-shaped fleshy leaves, and axillary flowers growing several together; the flowers are short, tubular, with five rounded lobes, and are green, with a conspicuous purple-toothed calyx. It is found on Mount Salak, and in other parts of Java. Introduced by Messrs. Veitch in 1845. Flowers in March and April. It has several other names, such as *Æschynanthus albida* (Alph. de Candolle); *Trichosporum albidum* (Nees); *Lysionotus albidus* (Blume); and *Bignonia albida* (Blume).

Æschynanthus pulchra, Steudel (beautiful Blushwort).—A sub-scandent branching shrub, with opposite broadly ovate fleshy leaves, and terminal corymbs of large showy blossoms; the flowers are large, tubular, curved, divided into five segments, quite smooth, of a rich deep scarlet colour, with dashes of yellow in the throat. A native of Java. Introduced by Messrs. Veitch in 1845. Flowers in June and throughout the summer. It is also called *Trichosporum pulchrum* (Blume).

Æschynanthus Lobbianus, Hooker (Mr. Lobb's Blushwort).—A branching sub-scandent shrub, with opposite fleshy elliptic leaves, and terminal corymbs of beautiful flowers; the latter are tubular curved, downy, of a rich scarlet, and divided into four segments, the upper one slightly cleft; they are half enclosed in a conspicuous bell-shaped purple calyx. It is a native of Java, introduced by Messrs. Veitch in 1845. Flowers from June to August.

Æschynanthus miniatus, Lindley (vermilion Blushwort).—A sub-scandent shrubby plant, with rooting branches, opposite, acutely oval fleshy leaves, and axillary flowers growing three together; the flowers are smaller than in the two last, but of the same form and colour, and they are hairy, with a shallow dish-shaped calyx. It is found in Sincapore, and also commonly in Java. Introduced by Messrs. Veitch in 1845. Flowers in June and throughout the summer. It is apparently the same plant as the *Æ. radicans* (Wallich, not of Jack) and is probably also the *Trichosporum radicans* (Blume); it is also the *Æ. Wallichii* (Brown).

Æschynanthus Boschianus, De Vriese. (Van den Bosch's Blushwort).—A trailing shrubby plant, with rooting branches, opposite ovate small fleshy leaves, and axillary clusters of blossoms; the flowers are large, tubular, curved, and divided into four segments, the upper one two-lobed; they are of a rich scarlet colour, and have a purplish brown calyx. It appears to have been introduced to this country from the continent in 1844, but its native country is uncertain; it is doubtless an eastern plant.

Æchynanthus Horsfieldii, Brown (Mr. Horsfield's Blushwort).—An erect branching shrubby plant, with opposite ovate lance-shaped fleshy leaves, and numerous axillary blossoms; the latter are tubular, divided into five lobes, and of a light scarlet colour; they are produced very freely. It is a native of Java. Introduced in 1843. Flowers from June to August.

Æschynanthus longiflorus, De Candolle

(long flowered Blushwort).—A sub-erect shrubby plant, with spreading and rooting branches, opposite oblong lance-shaped leaves, nearly entire at the margins, and large handsome axillary flowers growing in aggregated clusters, each on a separate stalk, placed close together and quite erect; they are upwards of two inches long, tubular, slender and straight at the base, but larger and also curved towards the top; the colour is a rich deep velvety crimson scarlet. It is a native of Java, and is found in damp forests 3000 or 4000 feet above the sea. Introduced by Messrs. Veitch in 1845. Flowers in November, and probably through great part of the year. It is also called *Lysionotus longiflorus* (Blume).

Besides these species of Æschynanthus, Messrs. Veitch of Exeter possess at least two other kinds, of which we have only seen small plants, and these not in a flowering condition. These plants appear to be distinct at least from all the preceding. One is named *Æschynanthus zebrina* (garden name); it has opposite lance-shaped pointed leaves, which are on the upper surface of a deep green colour, marked by paler lines or streaks in the position of the embedded veins, the underside is blotched with reddish brown. The other is called *Æschynanthus atrosanguinea* (garden name); this has opposite ovate lance-shaped pointed leaves, which are deep red beneath. The latter indicates in its appearance a near relationship with *Æ. Lobbianus* and *Æ. miniatus*; the former has the appearance of the more familiar kinds, such as *Æ. grandiflorus* and *Æ. maculatus*.

ON NAMING FLORISTS' FLOWERS.

We frequently judge of a man's taste by very trifling acts, and sometimes fancy we can take the measure of his capacity by the names he gives to his flowers. Some men exhibit a rare consistency, by taking all the names they require from the same source, and selecting them with some regard to their applicability to the subject itself, as names from the Heathen Mythology, or from the Waverly Novels, or winning race-horses, or great statesmen and their ladies, or commanders of renown and their wives; sometimes, indeed, this is carried on so far as to name a flower after a lady not in existence, but simply because there has been a lord of the name. To instance the utter want of taste among some men, imagine two persons having raised a red flower; one calls his Miss Taylor, and the other Mars; now, had there been a Miss Taylor with a very red face, and he had desired to remind the lady and her friends of her infirmity, one might have given him credit for his common sense, if we had condemned his cruelty; but Miss Taylor, the young lady he desired to compliment, was an elegant and exceedingly delicate young lady, at home for her holidays; now this man, in such a trifling act as that, betrayed sad ignorance and vulgar taste, or rather want of taste. It was what the world calls a left-handed compliment. The one who called his red flower Mars, offended no rule of propriety; and when we see among the flowers raised by the same person, the name of Diana given to a white flower, and Flora given to a beautiful one, Hercules to a large and strong one, Cupid to a small one, there seems to be some consistency and thought about him. But the rage for names has rather subsided, in consequence of the great check upon the number tolerated; formerly there used to be from one to three hundred new dahlias a-year, and having answered the purpose of the owners, by bringing a price equal to the best, and been grown one year, they have been heard no more of. At that time, all the sources for names were ransacked; the names of songs, among other sources, supplied a number,—the Rose of Yarrow, Poll of Plymouth, Crazy Jane, Joe the Marine, and many others; the names of wines were resorted to, Claret and Burgundy, Constantia and others, will be recollected by many. The stars shed their influence over the novelties, for we had Mercury, Venus, Jupiter, Ursa Major, and many more. Then there were many botanical names, the most stupid of all, because many were inapplicable, and the distinctions so ridiculously small or unimportant; thus Rubra cœrulea, from which we may expect red and blue, or a bluish red, was a dirty purple, and there were fifty others of the same colour; Picta formosissima was a striped flower, of no form at all, whereas its name signified it was in that particular superior. If such names were adopted in earnest, they should be descriptive of strong points only; but it was an affectation altogether, to pretend to describe by botanical terms characters shared in common with scores. Then some of our florists were fond of plays and theatres, and one lot would be honouring all the dramatists, another would be selecting from characters in the plays, while a third selected the favourite performers, male and female. But of all the sources that were resorted to for names, the most improper was the Bible. It was a wanton attack upon the scruples of many pious Christians; a perversion of sacred things. It betrayed a species of ignorance not pardonable in the age we live in; a folly, if not a wickedness, without an excuse. If it were done in ignorance, it was bad; if in contempt, it was worse. Names are in general given to flowers in compliment to somebody or something, but what can be the motive when taken from the sacred writings?

what excuse can be given for the names of Jehu, Cherubim, Og King of Basan, King Ahasuerus, and such like? There is nothing to recommend them, nothing euphoneous; it seems a kind of familiarity not at all creditable, a disrespect openly shown to a book in which millions place their hopes of happiness now and hereafter, and it is to them highly offensive. We are not going to open up a theological question, for religion is a subject not to be touched upon in works like these, except so far as religion may be defended anywhere, against any persons who make horticulture the means of offending. We know that in one or two instances the name has been given thoughtlessly by people who meant no harm. We have touched upon the subject with a view of putting a stop to, at the best, a foolish, and, so far as example goes, a mischievous act, that may grow into a practice. If we put it on no worse footing, it is extreme bad taste; there are persons who would not even grow a flower under a name at the bare mention of which, we are told on the highest authority, every knee shall bend. We approve of the taste that selects appropriate names from dramas, from novels, from histories; and these are inexhaustible. A single play would suggest half a score,—Sir Peter Teazle, Lady Teazle, Sir Benjamin Backbite, and the rest of the dramatis personæ in the School for Scandal would last a very lucky man some time, and such names are far better than those of popular idols. The Duke of Wellington, Sir Robert Peel, Lord John Russell, Queen Victoria, Prince Albert, and many equally important persons and personages, have had their names given to twenty things the same season; and it is far better that names, not of such temporary or such great interest, as the case may be, should be taken, as the less likely to be imitated. It should also be a sort of principle among florists to avoid naming things the same as others are already named, or likely to be named, and even to make choice of something that will afford a series. A steam-boat company has set an example worth following; one, with nine or ten boats, names the whole after flowers; we have the Lily, Snowdrop, Pink, and so on: then there is a company which names all after the stars, such as Venus, Mercury, &c.; another after precious stones, Diamond, Ruby, Emerald, Topaz, &c.; and the Iron Steam-boat Company, with their first four boats, had Starlight, Daylight, Twilight, and Moonlight, and having exhausted the lights, began on what some people call the dark side of the case, Matrimony, Bachelor, Bridesmaid, Wedding Ring. All these fancies are well enough, but it is as well to commence with something that will supply enough, so that the source should not require changing. And while upon the subject of naming flowers, we would suggest the propriety of attaching to them a brief but unmistakeable description, that should stick to it like its name; in fact, one should be identified with the other; it would prevent many mistakes. It would be advisable also in Pansies, Tulips, and many other flowers, to let the title in every respect show what it is; for instance, Bizarres should be always masculine names, Roses all feminine, and Byblomens all neuter; in Pansies, the yellow grounds all masculine, the white grounds all feminine; in Picotees, heavy edges all masculine, and light ones all feminine: something of this kind would be generally useful, and make us all familiar with the main class from the hearing or reading of their names. Taste ought to have done this; but when we consider the various grades of life from which some of the best florists have sprung, and how many of the very ignorant and humble classes have been concerned in the naming as well as the raising of our best flowers, it is not to be wondered at. Let us express a hope that these few remarks may be of some use among those who rarely give themselves the trouble to think, for however simple a thing we may have to do, there is nothing worth doing that is not worth a consideration of what is the best way to do it.

NOTES ON FLOWERS AND FLOWERING PLANTS.

TRICHOMANES RADICANS, *Swartz* (rooting Bristle fern.)—Polypodiaceæ § Hymenophylleæ.—A small fern, almost transparent in texture, and one of the most beautiful kinds in cultivation. It has a long tomentose, creeping stem, from which the fronds grow nearly erect, of an ovate outline, membranous texture, and two, three, or four times pinnatifid, the ultimate segments being linear oblong; the frond has a kind of crisped or curled appearance, and though of a deep green is nearly transparent in a fresh state. A very widely extended species, occurring in slightly varied forms in Jamaica, Martinique, Brazil, Mexico, Sandwich Islands, Nepal, and various parts of Europe, including England and Ireland. It bears many names, of which the most common are:—*T. scandens* (Hedwig), *T. diaphanum* (Humboldt), *T. speciosum* (Willdenow), *T. brevisetum* (Brown), *T. alatum* (Hooker), *T. europæum* (Smith), *T. pyxidiferum* (Hudson), *Hymenophyllum alatum* (Smith), and *Didymoglossum alatum* (Desvaux). *Culture.*—Should be kept in a greenhouse, covered with a bell glass, and the pot set in a pan, frequently but not constantly supplied with water; rough peat soil mixed with freestone and silver sand; propagated by division of the plant.

Smithia purpurea, *Hooker* (purple-flowered Smithia).—Fabaceæ § Papilionaceæ-Hedysareæ. — A small twiggy annual (?) plant, with erect slender stems, furnished with elegant stalkless leaves, closely pinnated, and having from ten to twelve pairs of small oblong leaflets: the flowers grow from two to five together, in short racemes at the ends of the shoots; they are small, butterfly-shaped, and of a deep purple colour, with a spot or two of white near the base. A native of Bombay. Introduced in 1846. Flowers from August to October. *Culture.*—Requires a stove; peat, loam, and sand; propagated by seed. (43)

Cordyline Rumphii, *Hooker* (Rumphius' Cordyline). — Liliaceæ § Asparageæ. — A shrubby plant, with a simple erect stem, two or three feet high, bearing foliage at the summit; the leaves are linear, lance-shaped, a foot and a half long, and gracefully recurved; the flowers, which are very numerous, and of a green and white colour, grow in large terminal branching panicles. The plant has the habit of a Dracæna, or more remotely that of a Yucca. A native of Amboyna, and of Java. Date of introduction unrecorded. Flowers in July. Also called *Sansieveira fruticosa* (Blume). *Culture.*—Requires a cool stove; peat and loam, and plenty of pot-room; propagated by off-shoots from the plant. (44)

Exogonium Purga, *Bentham* (Purga, or true Jalap).—Convolvulaceæ § Convolvuleæ. —A beautiful slender twining plant, producing roundish tubers, which become as large as a moderate-sized turnip, and give rise to numerous rootlets and stems; the leaves are rather small, cordate, very much acuminated, so as to approach arrow-shaped; the flowers grow from the axils, usually two or three together, rarely singly; they are of a purplish red colour, between funnel and salver-shaped; that is, they have a long slender tube, and an expanded limb about two and a half inches across. A native of the high mountains of Mexico. Introduced to England many years ago, and to the Edinburgh Botanic Garden about 1838; but subsequently lost, and re-introduced. Flowers in August and September. Also called *Ipomœa Jalapa* (Nuttall), *I. Purga* (Wenderoth), *I. Schiediana* (Zuccarini), and *Convolvulus Jalapa* (Schiede). *Culture.*—Requires a frame or cool greenhouse, just free from frost; light rich loam; propagated by cuttings or seeds. (45)

Begonia fuchsioides, *Hooker* (fuchsia-like Elephant's Ear).—Begoniaceæ.—A beautiful sub-shrubby plant, with erect, gracefully branching succulent stems, and furnished with copious small oblong-ovate serrated leaves; the flowers grow in drooping panicles from axils at the ends of the numerous branches, and are of a rich deep scarlet colour; they are usually, as far as yet known (1847), diœcious, that is, the male and female blossoms are produced on separate plants. The blossoms seen from a short distance much resemble a bunch of fuchsia flowers, and indeed the whole plant bears considerable resemblance to a free grown fuchsia. In its native country, it is eaten by the mule drivers to allay thirst. A native of the Ocaña mountains of New Grenada. Introduced to Kew in 1846. Flowers in November and December. *Culture.*—Requires a stove; loam and peat, with plenty of pot room, well drained; propagated freely by cuttings. (46)

Niphæa albo-lineata, *Hooker* (white-lined Niphæa).—Gesneraceæ § Gesnereæ.—A small pretty perennial plant, producing elongated scaly tubers—of which each scale will produce a plant; erect stems, growing a span high, with opposite leaves of rather large size, ovate, and coarsely serrated, and having the principal veins marked with white lines on the upper surface; the flowers grow in a crowded umbel-like manner from the axils of the upper leaves, which are somewhat near together; they are about half-an-inch across, wheel-shaped, of a pure white colour, with notched edges. A native of moist banks near Laguneta, Ocaña, in New Grenada. Introduced to Kew in 1845. Flowers in September and October, or at other periods according to the time when started, soon arriving at perfection. *Culture.*—Requires a stove; loam, peat, and leaf-mould; propagated by the scaly tubers, by cuttings, or by planting the leaves in sand. (47)

Calanthe curculigoides, *Wallich* (yellow-spiked Calanthe).—Orchidaceæ § Vandeæ-Calanthideæ.—A handsome terrestrial orchid, growing with a tuft of oblong plaited leaves, and a spike-like raceme from the base of the plant, thickly clothed with moderate sized orange-buff coloured flowers, with a spot or two of crimson in the centre, and a singular curved spur behind; in wild specimens, the flowering part of these racemes is a foot in length. A native of Malacca. Introduced by Messrs. Loddiges in 1843. Flowers in November. *Culture.*—Requires a hot damp stove; potted in turfy peat; propagated slowly by division. (48)

Raphistemma pulchella, *Wallich* (pretty Raphistemma).—Asclepiadaceæ § Stapeliæ.—An evergreen twining plant of the habit of Stephanotis, and resembling *S. floribunda;* it has pointed heart-shaped shining leaves, and numerous umbels of large white sweet-scented salver-shaped flowers, with ovate obtuse segments. A native of various parts of the East Indies. Introduced about 1845. Flowers in October. It is also known as *Asclepias pulchella* (Roxburgh), and *Pergularia* (?) *campanulata* (Hamilton). *Culture.*—

Requires a stove; peat, loam, and sand; cuttings in heat, under a glass. (49)

ERYTHRINA BIDWILLII, *Herbert* (Mr. Bidwill's Erythrina.)—Fabaceæ § Papilionaceæ-Erythrineæ.—A very handsome perennial, producing vigorous shoots which die down to the root after flowering; the leaves have a variable number of leaflets of an obovate figure, and have a few thorns on the stalks and principal ribs; the flowers are borne in threes from the axils of the upper leaves, as well as in a terminal spike; they are large butterfly-shaped, and of a rich scarlet colour. A garden hybrid, raised at Sidney, and remarkable as being the only *certain* hybrid papilionaceous plant yet (1847) raised. Introduced in 1845. Flowers in August and September. *Culture.*—Half hardy, or in dry warm soils probably hardy; rich loam and leaf mould; propagated by cuttings of the young shoots, raised like Dahlia cuttings. (50)

IRIS SETOSA, *Pallas* (bristle-tipped Iris).—Iridaceæ.—A pretty hardy herbaceous perennial, with sword-shaped leaves, and bearing large deep lilac-coloured flowers, marked about the centre with yellow and crimson, on a stem growing from one to two feet high. A native of Siberia, Kamtchatka, Unalaschka, &c. Introduced in 1844. Flowers in May. The root is said to be poisonous. Also called *I. brachycuspis* (Fischer), *I. cuspidata* (Fischer), and *I. brevicuspis* (Schultz). *Culture.*—Hardy; common garden soil, dry in winter; propagated by division of the plant and by seeds. (51)

EPIDENDRUM PYRIFORME, *Lindley* (pear-bulbed Epidendrum).—Orchidaceæ § Epidendreæ-Læliadæ. — A pretty little epiphytal plant, with pseudo-bulbs like small inverted pears, each bearing two oblong lance-shaped leaves, of four inches long; the flowers, usually two on a scape, are more than two inches in diameter, with reddish yellow sepals and petals, and a pale straw-coloured lip veined with crimson. A native of Cuba. Introduced in 1844 (?) Flowers in January. *Culture.*—Requires a stove; rough turfy peat; propagated by division of the plant. (52)

LUPINUS EHRENBERGII, *Schlechtendahl* (Ehrenberg's Lupin).—Fabaceæ § Papilionaceæ-Crotalariceæ.—A pretty biennial, growing from two to three feet high, with leaves composed of five to seven oblong lance-shaped hairy leaflets, and bearing elongated racemes of butterfly-shaped flowers, which are white at the upper part, tinged with yellow, and below purple, with a tint of rose. A native of mountains near Angangueo, in Mexico. Introduced in 1846. Flowers in August and September. *Culture.* — Half hardy; best grown as a half hardy annual, sown in February; to flower early it must be sown in August; light loam; propagated by seeds. (53)

EPIDENDRUM PLICATUM, *Lindley* (plaited-lipped Epidendrum)—Orchidaceæ § Epidendreæ-Læliadeæ.—A showy epiphytal plant, with ovate pseudo-bulbs, each bearing two acute sword-shaped leaves; the flowers are in short racemes; the sepals and inside of the petals are green, the former just tinted and the latter richly spotted with crimson; the back of the petals is rich crimson, as is the plaited crenelled lip which has a long point. A native of Cuba. Introduced in 1845 (?) Flowers in January. *Culture.*—Requires a stove; rough, turfy peat; propagated by division of the plant. (54)

CLERODENDRON MACROPHYLLUM, *Blume* (large-leaved Clerodendron).—Verbenaceæ.—A magnificent, soft-wooded shrub, the stem growing erect, and very stout in young plants compared with their stature; the leaves are elliptic, thick, almost leathery, fourteen to sixteen inches long without the stalk, dark green; the panicles of flowers are axillary and terminal, so numerous that the whole plant may be said to form one vast panicle—a specimen we saw, three feet high, formed a pyrimidal panicle of blossoms; the flowers are large and white. A native of sandy places on the Seribu mountains of Java. Introduced by Messrs. Veitch, in 1846. Flowers from October to December. Also called *C. phyllomega* (Steudel). *Culture.*—Requires a stove; grows freely in loam and peat, and requires plenty of pot room; propagated by cuttings in heat, under glasses. (55)

ALSTRÖMERIA PSITTACINA, *Sprengel* (parrot-like Alströmeria).—Amaryllidaceæ § Alströmerieæ.—A tuberous-rooted, herbaceous plant, with annual stems about two feet high, the barren ones clothed with narrow leaves, about two inches long, forming a thickish tuft at the summit; the flowering stems have the leaves more scattered, and the flowers in bunches at the top; the flowers are rather curved, tube-shaped, of six narrow segments, the upper one the longest, bright red, tipped with green, and spotted. A native of Brazil. Introduced in 1829. Flowers from July to September. *Culture.*—Nearly hardy, requires a little protection over the roots in winter, or a frame; sandy loam; rest in autumn and winter; propagated by parting the roots. (56)

FRITILLARIA OBLIQUA, Ker (twisted-leaved Fritillary).—Liliaceæ § Tulipeæ.—A bulbous plant, with a stem about a foot high, clothed with scattered narrow lance-shaped leaves, and terminated by two or three flowers on separate stalks; the flowers are composed of six segments, broadest towards the points, overlapping at the edges, and assuming a bell shape; they are of a dull violet or mealy-purplish colour. A native of the Caucasus. Time of introduction uncertain. Flowers in

April. *Culture.*—Hardy; moist, loamy soil; should not be disturbed too often; propagated by offsets. (57)

GLEICHENIA MICROPHYLLA, *R. Brown* (small-leaved Gleichenia).—Polypodiaceæ § Gleicheneæ.—A small, elegant fern, with dichotomous, or forked fronds; the branches, or forks of the frond, are narrow and pinnate, and the pinnæ pinnatifid, with ovate or subrotund segments, the margins being slightly recurved; the branches and rachis are clothed with rusty chaffy hairs, and the forks of the fronds spread widely asunder. A native of New Holland. Introduced in 1823. Known also as *G. Speluncæ* (Guillem), and supposed to be the same as *G. circinata* (Swartz). *Culture.*—Requires a greenhouse; peat and loam; propagated by division of the plant. (58)

CLEMATIS CRISPA, *Linnæus* (crisp-flowered Virgin's bower).—Ranunculaceæ § Clematidæ.—A deciduous climbing shrub, with compound leaves, the leaflets of which are mostly of a lance-shaped figure; the flowers grow singly from the axils, and are large and ornamental, consisting of four sepals which are fleshy at the base, tinged with purple, constricted in the centre, and divided above the centre into four ovate, recurved, crisped, pale-coloured segments; they are very sweet-scented, especially towards evening. A native of California. Introduced in 1726, but amid the confusion which exists in the names of this and some allied kinds is now seldom recognised, if it was not indeed lost until recently re-introduced. Flowers from June to September. This is the *Clematis flore-crispo* (Dillenius). *Culture.*—Hardy; common garden soil; propagated by cuttings, layers, or by seeds. (59)

ALLIUM TRIQUETRUM, *Linnæus* (triangular-stemmed Garlic).—Liliaceæ § Scilleæ.—A bulbous plant with long strap-shaped leaves, the midrib forming a keel; the flowers, which are produced in a bunch at the top of a sharply three-edged stalk, are bell-shaped, with six segments, white, with a green stripe down the centre of each. A native of the south of France, Spain, and Algiers, and probably of other places on the shores of the Mediterranean. Introduced in 1759. Flowers in May and June. *Culture.*—Hardy; dry loam; propagated by division of the root, or by seeds. (60)

HIPPEASTRUM BULBULOSUM, *var. acuminatum* (pointed-leaved bulbillose Hippeastrum).—Amaryllidaceæ § Amarylleæ.—A bulbous plant, with long strap-shaped leaves, covered with glaucous bloom, and a stout flower-stem, bearing two or more flowers at the top; the flowers have a short tube, divided into six segments, about three inches long, waved on the edges and sharp-pointed, of a pale orange-scarlet colour. A native of Brazil. Introduced in 1823. Flowers from April to August. Known also as *Amaryllis acuminata* (Lindley). *Culture.*—Requires a stove; strong loam, good drainage, and rest when not growing; propagated by offsets and seeds. (61)

DIPLACUS GLUTINOSUS, *Nuttall* (glutinous branched Diplacus).—Scrophulariaceæ § Antirrhinideæ-Gratioleæ.—A small shrubby plant from three to six feet high, but capable of being grown into a dwarf bushy specimen: it has oblong, lance-shaped, obtuse, opposite leaves, and mimulus-like orange-coloured flowers, which grow singly from the axils of the leaves on the young shoots. A native of California. Introduced in 1794. Flowers from June to September. It is also called *Mimulus glutinosus* (Wendland), *M. aurantiacus* (Curtis), and *Diplacus latifolius* (Nuttall). *Culture.*—Requires a greenhouse in winter, but grows well out-doors in summer; sandy loamy soil; propagated by young cuttings in a slight heat. (62)

TAGETES LUCIDA, *Cavanilles* (shining Tagetes).—Asteraceæ § Tubuliflore-Tageteæ. A herbaceous perennial, with erect branches, growing from one to two feet high, and branching at the top in a corymbose manner, where the flowers are numerously produced; the leaves are opposite lance-shaped, and serrated, and the flowers of a very deep orange-yellow colour, rather small, but very ornamental. A native of South America. Introduced in 1798, but not in general cultivation. Flowers from July to September. *Culture.*—Requires a greenhouse or dry frame in winter, and to be planted out in summer; light rich loamy soil; propagated by cuttings, or by division of the plant. (63)

VALLOTA PURPUREA, *Herbert* (purple-stalked Vallota).—Amaryllidaceæ § Amarylleæ.—A bulbous plant with long narrow leaves, and a stem rising more than a foot high, crowned by three or more flowers, which are divided into six segments at top, funnel-shaped, two inches long, of a rich crimson-lake colour; the bulb is black coated. A native of the Cape of Good Hope, in boggy peaty places. Introduced in 1774. Flowers from May to August. Also known as *Amaryllis purpurea* (Ker), and *Amaryllis elata* (Jacquin). *Culture.*—Requires a warm greenhouse; loam and peat mixed; always kept growing; propagated by offsets or seeds. (64)

SPREKELIA FORMOSISSIMA, *Herbert* (Jacobean Lily).—Amaryllidaceæ § Amarylleæ.—A bulbous plant with long narrow leaves, and a stem attaining about a foot in height, bearing one large flower, very seldom two; the flowers are in six narrow segments, widely spreading, curving backwards, and of an intense crimson colour. A native of Guatemala. Introduced in 1658. Flowers in April, and occasionally again in October. Better known as *Amaryllis formosissima* (Linnæus). *Culture.*—Hardy, in dry sheltered places; sandy loam; may be treated as tulips; propagated by offsets. (65)

HIPPEASTRUM BULBULOSUM, *var. pulverulentum* (powdery bulbillose Hippeastrum). —Amaryllidaceæ § Amarylleæ.—A bulbous plant, with long strap-shaped glaucous leaves, and a stout flower-stem three feet high, bearing three or more flowers; the flowers have a short tube, are deeply divided into six broad segments, three or more inches long, of a deep orange-scarlet colour. Native of Brazil, near Rio de Janeiro. Time of introduction unknown. Flowers from April to August. Also known as *Amaryllis pulverulenta* (Herbert). *Culture.*—Requires a stove; rich loam, good drainage, and rest in winter; propagated by offsets and seeds. (66)

FRITILLARIA NERVOSA, *Willdenow* (nerve-leaved Fritillary).—Liliaceæ § Tulipeæ.—A bulbous plant producing flower-stalks rather above a foot high, furnished with scattered strap-shaped leaves, each with an oblique twist near the upper end, and terminated by a single pendulous flower, as large as a middling sized tulip, composed of six segments, overlapping each other at the edges, of a dull purplish colour stained with green, and chequered with a darker colour on the outside. A native of the south of Europe. Introduced before 1600. Flowers in April and May. *Culture.*—Hardy; moist loam; propagated by division of the roots, but should not be disturbed too often. (67)

BOMAREA SALSILLA, *Herbert* (climbing Bomarea).—Amaryllidaceæ § Alströmerieæ.—A tuberous-rooted plant, with weak twining annual stems rising more than a foot high, furnished with narrow twisted glaucous leaves, and terminated by eight or more smallish flowers; the flowers are in six segments, of a purple colour, with darker spots on the three inner divisions. A native of Chili. Introduced in 1831. Flowers from May to September. Generally known as *Alströmeria oculata* (Loddiges). *Culture.*—Requires a cool greenhouse; light loam and peat; propagated by division of the roots, and by seed; seedlings vary considerably in colour. (68)

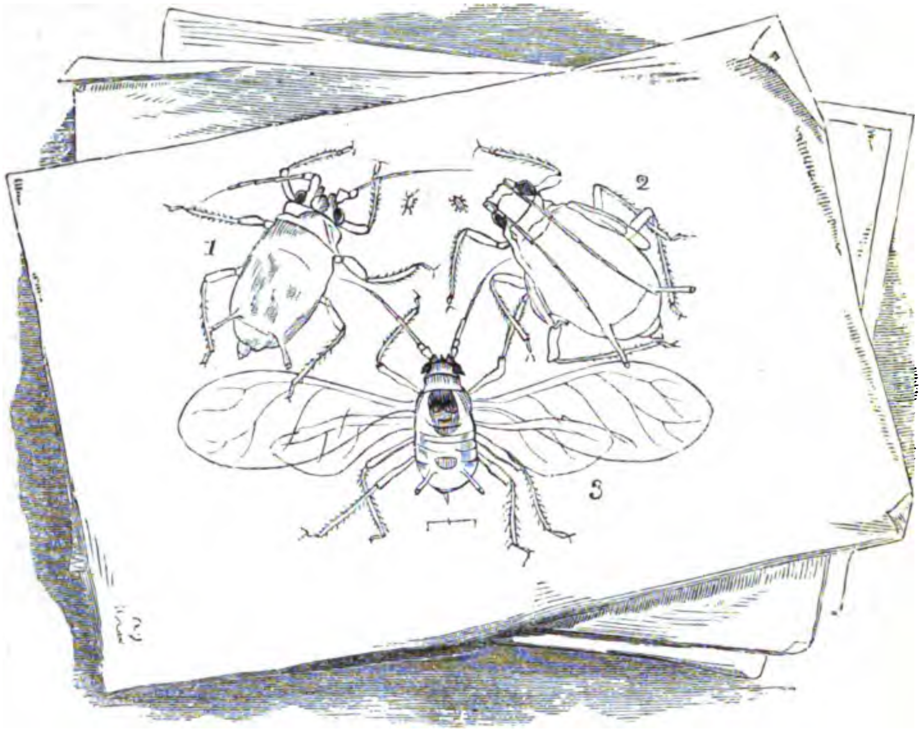
GONOLOBUS HISPIDUS, *Hooker* (hispid Gonolobus).— Asclepiadaceæ § Gonolobeæ.— A sub-shrubby plant, with half-climbing stems clothed with soft hairs, and opposite ovate leaves, undulated and cordate at the base; the flowers are in axillary umbels, several in each umbel, and are wheel-shaped, concave, of a leathery texture, and divided into five segments; they are of a dark brownish purple colour, and have a singular concentrated odour, which has been compared to the flavour of roasted peas. A native of Entre Rios, in South Brazil. Introduced in 1837. Flowers in July and August. *Culture.*—Requires a greenhouse, or would probably succeed against a conservatory wall; loam and peat; propagated by cuttings placed in heat. (69)

BEGONIA NITIDA, *Aiton* (shining Begonia, or Elephant's ear).—Begoniaceæ.—A fleshy-stemmed plant, of branching habit, and smooth heart-shaped leaves, unequal at the base; the flowers are borne in axillary cymes, which are dichotomously branched; they are white, and rather pretty. A native of the mountains of Jamaica. Introduced in 1779. Flowers in July and August. Also called *B. obliqua* (L'Heritier). *Culture.* — Requires a cool stove; loamy soil; propagated easily by cuttings. (70)

ALSTRÖMERIA HŒMANTHA, *var. pilosa*, (hairy blood-flowered Alströmeria). —Amaryllidaceæ § Alströmerieæ.— A tuberous-rooted plant, with annual stems rising about two feet high, furnished with oval lance-shaped leaves, fringed with hairs, and terminated by from eighteen to twenty largish flowers, which are of six segments, spreading at top, of a vermilion colour. A native of the mountains near Concon, in Chili; very rare. Date of introduction uncertain. Flowers from June to September. *Culture.*—Requires a pit or warm border, with slight protection in winter; free loam; propagated by division of the roots, and by seeds. (71)

CYRTANTHUS ODORUS, *Ker* (sweet-scented Cyrtanthus).—Amaryllidaceæ § Amarylleæ — A bulbous plant with very narrow linear leaves, and a flower stem surmounted by about four flowers, which are narrow, funnel-shaped, divided at the mouth into six segments, pendulous, pleasantly fragrant, and of a crimson colour. A native of the Cape of Good Hope. Introduced in 1818. Flowers in May and June. *Culture.*—Requires an airy, dry stove; rich loam, no water whilst dormant; propagated by offsets or seeds, but is best renewed by imported bulbs. (72)

GASTRONEMA CLAVATA, *Herbert* (club-shaped Gastronema). — Amaryllidaceæ § Amarylleæ. — A little bulbous-rooted plant, with slender, dark green leaves, and a flower stem surmounted by one or two flowers; the flowers are tubular, at the base slender, curved above, and bell-shaped, divided into six short reflexed segments, white, striped with red. A native of the Cape of Good Hope. Introduced in 1816. Flowers from May to August. Known also as *Cyrtanthus uniflorus* (Ker), *Amaryllis pumilio* (Aiton), and *A. clavata* (L'Heritier). *Culture.*—Requires a greenhouse or warm pit; free loam; dry in winter; propagated by offsets; often imported. (73)



THE APHIS VASTATOR.

THIS species of the family of insects, commonly known by the name of "Green-fly," is determined by Mr. Smee, in his recent work on the Potato Plant,[*] as the cause of the malady which has affected the crops of that vegetable; and his opinion has not been hastily formed, but has evidently been the result of careful, extensive, and original investigation. We cannot, indeed, fully coincide in Mr. Smee's views; although in the absence of any positive and certain explanation of this really important question, the insect theory, supported as it is by such an amount of circumstantial evidence as this gentleman has recorded, may fairly lay claim to as much consideration as any other that has been broached.

We glean the following particulars of the aphis from Mr. Smee's book :—

The *Aphis vastator*, when full grown, is about the tenth of an inch long. In very early life its body is nearly transparent; later, it is of an olive colour; at other times it is grass green; and at a later period may be found of a reddish colour. It is found in three stages of existence—the larva, the pupa, and the imago, or perfect-winged insect, in all of which states it feeds, remains active, and probably multiplies. The *antennæ*, or horns, are seven-jointed, nearly as long as the body, and sometimes even longer. When the creature is at rest, and feeding quietly, these lie reflexed over his back; but when he is roving about they are extended before him. The *rostrum*, or proboscis, is about one-fourth as long as the body, and contains a fine apparatus for piercing plants: this instrument, when open, presents three diverging delicate piercers, or lancets, one of which answers to the tongue, and the others to the jaws of insects. The head has fine spines upon it. The eyes are red or black, and so strongly coloured that they may be seen through the membrane which envelopes the insect before it is born. The abdomen is very angular, and is furnished towards the extremity with two tubercles, which extend posteriorly as far as the apex of the abdomen, and are hollow, containing a peculiar matter in the interior.* The winged insect has four wings, with which it is capable of flying great distances; but in its final state it is usually a lazy creature, and not very prone to fly far. The insects feed by thrusting their suctorial apparatus into the cellular tissue of the leaf of such plants as they attack.

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[*] "The Potato Plant: its Uses and Properties; together with the Cause of the Present Malady. The Extension of that Disease to other Plants, the Question of Famine arising therefrom, and the Best Means of Averting that Calamity." By Alfred Smee, F.R.S., Surgeon to the Bank of England, to the Royal General Dispensary, to the Central London Ophthalmic Institution, and Lecturer on Surgery at the Aldersgate School of Medicine. Illustrated with ten Lithographs. London: Longman, Brown, Green, and Longmans, Paternoster-row.

Curtis first named this insect the *Aphis rapæ*, from its having been found to attack the turnip. This name Mr. Smee apologizes to entomologists for having changed to *A. vastator*, the destroyer, because, as he states, it feeds upon the turnip in common with other aphides, itself too attacking twenty or thirty different plants.

Mr. Smee thus states the connexion between the insect and the disease:—The aphis vastator comes upon the potato plant in a winged state, and there brings forth its young alive. These generally prefer a large and rather debilitated leaf. After a short time the insect brings forth other young, which young themselves reproduce without any connexion with the other sex; and thus from a single specimen a plant may be speedily covered with the insects. It has been proved by Reaumur that in five generations one aphis may be the progenitor of 5,904,900,000 descendants; and it is supposed that in one year there may be twenty generations. I know no reason why the vastator should be less prolific than its congeners. The vastator begins at the larger leaves of the plant, which, after a short time, becoming injured by the abstraction of sap, die either partially or entirely. This is not going on in one plant alone; it is generally progressing in every plant in the field at the same time, leaf by leaf all dying. Regarding the mode in which a whole field becomes attacked I may observe that the vastator is a sad rover. When the creature first appears he is to be found sparingly distributed over the larger leaves of the plant; but when the greater part of the plant is destroyed, and the insect has multiplied, great numbers may be found on a single leaf: they then become partially starved, enter into the pupa state, cast their skins, and emerge as winged insects, when they fly away and leave no trace behind them, save and except the destruction of the plant, and some few specimens which have been injured by ichneumons. This fact is exceedingly remarkable, for on watching a piece of land, I have found scarcely one of the insects to be left behind, the greater part having had their wings developed, and flown away. I think that from the period of birth, it requires about a fortnight before the aphis obtains wings and flies away. When the vastator attacks the potato each leaf is separately destroyed, and the mischief may extend to the stalk and the root. The effect may be watched upon a sprig of potato placed in water. When the insect has damaged the leaf of the plant it is much influenced by wet weather; a shower of rain will fill the stems with water; and in consequence of the solid portion† having been taken away by the insect, the moisture cannot cause the rapid growth of the plant which should take place under such circumstances. The sap being thus in too fluid a condition acts prejudicially, and the plant rots at the collar, the under-ground stems, various parts of the upper stem, the leaves, the fruit. Sometimes when the plant is freed from its pest, it will send forth new roots to nourish the stem, and the haulm will thus retain much of its vigour. If, however, the plant has been once seriously damaged, it will perish without a second attack of the aphis. It is remarkable that even those tubers of diseased plants which appear sound in the first instance are very apt to become diseased upon keeping. Thus we may infer that every part of a diseased plant is diseased. As a consequence of the individuality of a plant being preserved and propagated from parent to offspring, a plant originally diseased will continue its disease in any new growth which originates from it; and thus it is impossible to tell for how long the disease may continue to show itself in the progeny of a plant once infected. The probability is that in time, if the original cause should not continue to act, the malady would be gradually annihilated.

Such is an outline, necessarily brief, of the connexion Mr. Smee traces between the aphides and the disease. The chief objection that has been raised against this view takes the broad ground that aphides cannot destroy healthy vegetation. This is, however, an untenable position. Gardeners, indeed, too well know the powers of these insects as regards their destructiveness of vegetables; and which they appear to effect in the manner pointed out by Mr. Smee. It may be interesting to show how far this opinion is opposed to general evidence. To notice individual cases:—the hop-plant is seriously damaged by an aphis, sometimes so much so as to destroy the crop, and the season's growth. The field-bean is attacked and destroyed in a similar way by an aphis. Geraniums and other greenhouse plants suffer irreparable injury from the attacks of an aphis. The young shoots of fruit trees are destroyed by aphides. The recorded opinions on this subject are explicit: we may quote a few examples:—M'Intosh, after noticing their extraordinary fecundity, observes,* "Such being their powers of propagation, and the voracity with which they attack the respective plants they feed upon (and few there be that are exempt from them), if they had not natural enemies to subdue them, all the efforts of man would be unavailing, and they would soon produce universal desolation." Curtis remarks,† "The mischief that follows from the presence of the aphides arises from their thrusting a hollow proboscis into the leaf or stalk of a plant, through which they imbibe the juices, thus supporting themselves at the expense of the plant; and by thus draining it of its due nourishment it soon becomes exhausted, droops, and often dies, when the number of the aphides is very great." In another place we find it stated ‡ that "were they not eagerly sought for by many other creatures, they would become more destructive to the whole vegetable creation than any other race of insects whatever." Again we read,§ that "many species of aphis commit most destructive depredations. During the summer of 1833 the cabbage and turnip crops in Kent were much injured and often destroyed by countless swarms of *A. brassicæ.*" Loudon speaks of them || as being most "universal depredators of vegetables." This is evidence enough of the power of these insects over vegetable life; and the main difficulty in accepting Mr. Smee's theory is, that there should result from the attacks of the insect, a *tainted existence*, instead of *entire destruction*, in the case of such as were attacked. This seems in some degree to favour the views of those who consider that the constitution of the plant is impaired by high cultivation. Probably a combination of the causes which have been assigned furnish a better explanation of the origin of the disease than either of them separately. In fact, it is not difficult to believe that a weakened constitution in the plant, resulting from excessive, high, (not lengthened) cultivation—that mode of cultivation, too, somewhat unnatural—accompanied by a morbid condition of the atmosphere, the latter condition also favouring the production, and aiding the attacks, of parasitical insects and fungi, would produce such a result as we have witnessed in the case of the potato. We are, nevertheless, aware that there are facts which viewed singly have a bearing against every one of these assumed causes.

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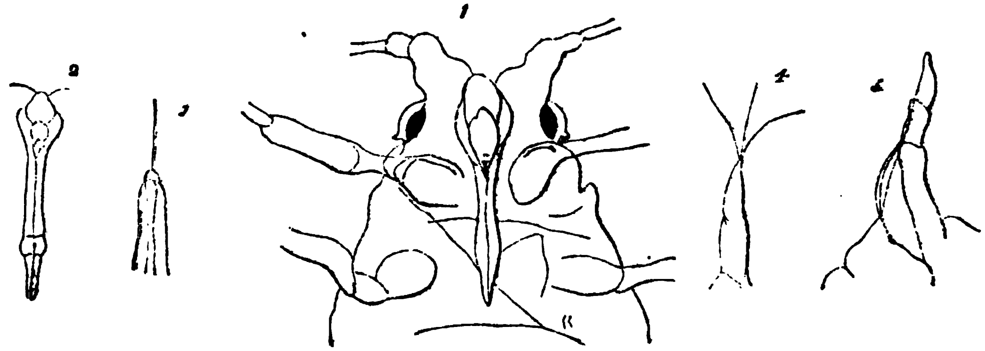
* Aphides are considered to secrete *honey-dew* from these organs.—*M.*

† That is, the solid matters contained in the sap.—*M.*



It is also fair to state, that by those persons in this country who have chiefly supported the insect theory, very different kinds of insects have been pointed out as the cause; and we believe Mr. Smee was the first who charged the mischief to an aphis.

The engraving at the head of this article represents the aphis in its larva (1), pupa (2), and winged (3) state, all considerably magnified. The detailed figures** here introduced are more highly magnified; they represent (1), the under surface of the vastator, showing the rostrum in its natural posture, the lancets being withdrawn, and consequently invisible; (2) the rostrum separate, the lancets withdrawn; (3) the rostrum separate, the lancets projecting from the apex; (4) the rostrum separate, the lancets projecting, and showing their three component parts; and (5) the rostrum, showing the lancets partly dislocated from the groove which is situated on its inferior surface.

As to remedies, Mr. Smee sums up what he proposes as follows:—

The best means of destroying the cause is to pick off the insect when we desire to protect a single plant. To pull off affected leaves, or to sprinkle them with quicklime, when we wish to protect a larger number of plants. We should endeavour to get our produce ripe at

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[*] Practical Gardener (ed. 1845), p. 326.

[†] Gardener's Chronicle, 1842, p. 4.

[‡] Dr. Gregory's Dictionary of Arts and Sciences, i. 22.

[§] Penny Cyclopædia, art. Aphis.

[||] Encyclopædia of Gardening (ed. 1834), p. 692.

[**] From the United Gardeners' and Land Stewards' Journal, 1847, p. 38.

an early period by using early kinds, and by planting early, perhaps even in autumn. We should protect ladybirds, ichneumons, and soft-billed birds, which feed upon them, and we may try the effect of ducks to gobble up the parasite.

Mr. Smee treats his subject throughout in a comprehensive way, or, as he himself expresses it, he was induced to "consider all the assumed causes of the malady;" and with this view we have chapters on the relation of the disease to internal causes, to external causes, to soils and manures, to fungi, to animal parasites; the disease in other plants; theory of the disease; future prospects; artificial and natural remedies, and on various other matters. The whole is handled in a thoroughly circumstantial and business-like way; and whatever may come of Mr. Smee's assumed discovery of the cause of the disease, he has provided an instructive and entertaining volume, not the least commendable feature of which consists in its originality. It is illustrated by several good lithographs.

MANAGEMENT OF TREES;

THE CONDITIONS UNDER WHICH THEY MAY BE MOST BENEFICIALLY PLANTED.*

The Oak delights in a strong deep loam; will flourish in clay land, with a small proportion of surface loam; very soon becomes bush-headed where there is a thin soil resting upon gravel or chalk; cannot endure marshy ground, and should not be planted in very high elevations: there are many ornamental kinds, the most useful are the two indigenous varieties, the sessile-fruited and the stalk-fruited, respecting the good properties of which practical men are divided in opinion.

The Ash delights in a sheltered situation, and good rich soil; is not fond of gravel; should never be planted in hedge-rows, as it will mat the ground to a considerable distance with its roots; makes good copsewood; is always the better and tougher the faster it is grown; its use for many agricultural and gardening purposes is well known; makes excellent fire-wood, however wet.

The Elm.—The two most important varieties are the narrow-leaved or English, and the Scotch; the former requires a good soil and warm situation; does not flourish in Scotland; grows rapidly, and attains a great height. The Scotch is the most useful sort; has smooth bark, and will grow in the most unfavourable soils, and very exposed situations; when cut up, does not long survive alternations of dryness and moisture.

The Beech delights in a chalky soil; has a fine effect as a detached tree; should not be grown in copsewoods, as scarcely any underwood will flourish beneath it: the wood is of little use for open-air purposes, but stands uninjured a long time when kept constantly under water.

The Sycamore flourishes in very poor soils, and in exposed and lofty situations; can stand a dash of the sea spray with little injury; grows very fast; is useful as a nurse to more valuable timber; was much used at one time for domestic utensils.

The Birch is chiefly valuable as a nurse-wood, as fuel, and for common purposes; will flourish in almost any soil, and in the coldest bleakest situation; is very desirable for garden purposes, as supplying us with the best besoms; is interesting on account of the fragrance of its leaves, and the whiteness of its bark, the latter property having often stirred up conscience-stricken alarms in the heart of the benighted wight, when stories of ghosts and spirits in white, as well as black, were more rife than now.

The Scotch Laburnum, especially the broad-leaved, is valuable for cabinet-making; obtains the best colour when grown on light sandy soils; will grow in any situation; has a fine effect on the borders of a wood skirting the high road, when in bloom; is greatly prized by hares and rabbits; is sometimes sown thickly as underwood, in plantations, for the purpose of saving other trees from these open enemies to the planter.

The Mountain Ash is valuable for its hardiness, as it will grow in any soil, wet or dry; forms a good nurse, as it grows very fast when young; is useful as timber for many purposes, though there is not often much of it; is beautiful both in flower and fruit, and was considered a most valuable exorcist in the hey-day of witchcraft, a piece of rowan tree and a ball of worsted constituting a greater bugbear to the broomstick sisterhood than the reversing of an old horse-shoe on the byre or stable door.

The Wild Cherry is very ornamental; is valuable for cabinet-making, and requires a dry soil; beware of planting it near villages or hamlets, unless you can command the equanimity of mind to be careless at the sight of boys, as well as birds, perched upon the branches in search of the fruit.

The Horse Chestnut requires a good loamy soil, and a sheltered situation; is beautiful in its outline, and splendid when in bloom; grows quickly, but the timber is useful for little else than firewood.

The Alder and the Willow are useful for marshy ground, and the sides of streams, where the latter is always an interesting object; the wood is comparatively of little value.

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* From the "United Gardeners' and Land Stewards' Journal."

The Lime and the Poplar, in all their varieties, require good soil to grow them to advantage, and then, notwithstanding their quick growth, and the many uses to which the wood may be applied, they should not be much planted where ultimate profit, rather than immediate effect, is the object aimed at.

Of resinous trees, *the Scotch Pine* may be first mentioned, as it will flourish in higher latitudes, more exposed situations, and poorer soil than any other of the resinous family; as, like the larch and the spruce, its roots keep near the surface, instead of descending to a great depth like the oak: trenching for its culture is almost a needless operation, unless where a very quick growth is required. In good loamy soils it will grow fast as a nurse plant, but in such circumstances its wood is soft and little worth; when grown in elevated situations, and poor sandy, or gravelly soils, its timber is valuable and enduring.

The Cluster Pine, the Stone Pine, and many others, though interesting as affording variety, have not yet been found equal in quality to the older sorts.

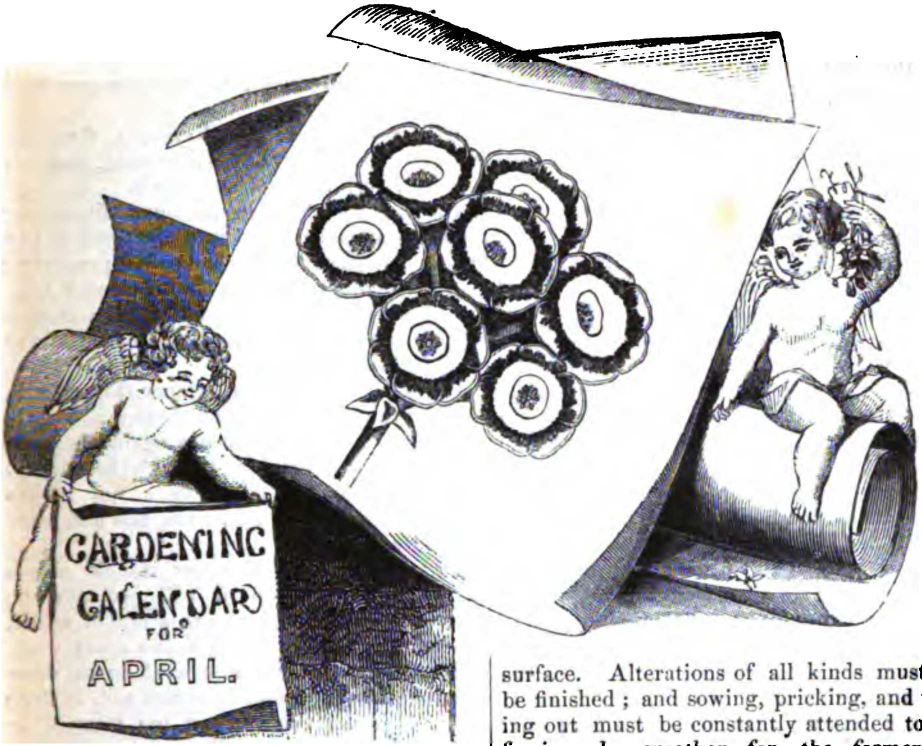
The Spruce Fir presents its chief claims to our attention from its being a beautiful evergreen, growing generally, whether singly or in masses, as straight as a regular cone; becoming thus fitted for all sorts of poles, the youngest trees being, so far as their size is concerned, as durable as old ones; making a good nurse plant from the warmth produced by its evergreen character; growing freely on all soils, from those that are low and wet, to those that are high and dry, but presenting the drawback that, for general purposes, its wood is far inferior to the Scotch pine and the larch.

The Larch is one of our most valuable timber trees, whether we consider its adaptation to all soils and situations, except a wet one, the rapidity of its growth, its admirable qualities as a nurse for the oak, &c., and the usefulness and enduring qualities of its timber, from the time it is fit for a rake handle, to the time it is cut up into boards and planking. In good deep loamy soils, it should only be used as a nurse, as the rapidity of its growth will deteriorate the timber if it does not render it hollow-hearted. The sides of mountains are its favourite sites, and poor scraggy land is to be chosen in preference to that which is richer; it is one of the best improvers of poor land, from the droppings of leaves, as may easily be seen in the vigour and luxuriance with which the grasses grow, after the trees have received their different thinnings. Even on this account it is valuable for covers for game, though it would be hard to make gamekeepers believe so, who prefer spruce, furze, and hazel, beneath which little will grow.

The Hazel is a valuable shrub for underwood and copsewood, especially where a hazelly loam preponderates; when cut every eight or ten years, it furnishes abundance of shoots for crate and basket ware, &c., and in favourable seasons, the nuts might be worth collecting; where, however, squirrels and boys congregate in the neighbourhood, it is better to make no calculation of revenue from this latter source. Sir Walter Scott was truly enthusiastic in his care of his plantations, but he found it no loss to admit the public to the greatest part of his demesne; and a fine sight it must have been to behold the younkers meeting the laird to show him the nuts in their pinafores, vastly proud if from any of them he would condescend to accept a handful. Well did the baronet know that neither his trees nor hazels would suffer when every urchin was thus put upon his good behaviour. Notwithstanding all that has been said to the contrary, there is, in general, in the heart of a Britisher, that which causes him to look with an eye of conservatism upon objects when an appeal is thus openly made to his sense of right, integrity, and honour.

WINTER FLOWERING PELARGONIUMS.

To produce flowers of the Pelargonium during winter and early spring, the following treatment is recommended:—When the plants have done flowering, they are headed down, at different times, to secure a succession of bloom the next season. When the plants have produced young shoots an inch long, the soil should be shaken from the roots, and they should be re-potted into their flowering-pots, the size of which will depend on the size of the plants, but should be as small as the roots can be got into without crowding. The young shoots should not be topped. By this treatment they will usually be knotted for bloom by the end of November, when they may be taken, in succession, into the flower-forcing house, or other structure where a genial warmth is kept up. There is no advantage in placing them in heat before the blooming buds are formed; on the contrary, this is often the cause of failure. If properly managed, the pelargonium will bear much more heat than is usually supposed. The following sorts are very suitable for early forcing:—Gauntlet, Grace Darling, Alba multiflora, Admiral Napier, General Washington, Bella. These may be succeeded later in the season by—Duke of Cornwall, Una, Sultana, Victory, Luna, and Coronation; but the latter sorts must not be placed in heat until they are well advanced.



THE KITCHEN GARDEN.

Sow asparagus, anise, basil, beans, beet, borecole, Brussels sprouts, brocoli, cabbages, cardoons, carrots, caraway, cauliflower, celery, celeriac, chervil, coriander, cumin, common cress, finochio, kidney beans, leeks, lettuces, love-apples, marjoram, marygold, mustard, nasturtiums, onions, parsley, parsnips, peas, purslane, radishes, savory, savoy, salsify, scorzonera, sea-kale, skirret, spinach, turnips, vegetable-marrow, and winter cress.

Plant and Transplant from nearly all of the above; also artichokes, chamomile, chives, fennel, garlic, potatoes, rosemary, scurvy-grass, tansy, tarragon, water-cress, and wormwood.

General Directions.—The ground should be well pulverized, and thoroughly prepared for the reception of the seeds; the well working of the soil is equal to a good manuring; avoid working the soil when wet. Take an early opportunity to ridge and furrow part of the garden; in doing this form ridges to run east and west, and from the top allow them to form a slope down on each side for eight or ten feet or more; on the south aspect plant the early crops, and on the north such as spinach or lettuce: this will prevent these crops from running to seed, and other conveniences attend the practice; it also secures more space for cropping by increasing the surface. Alterations of all kinds must now be finished; and sowing, pricking, and planting out must be constantly attended to, preferring dry weather for the former, and showery weather for the latter operations. Clear and prepare the ground for receiving new crops, and make it a rule that every part of the garden be occupied in regular rotation. Keep the hoe going unremittingly, thus suffering no weeds to grow, and at the same time opening the soil to atmospheric influence.

Artichokes (*Globe*).—The young plants raised from seed may now be planted out; young plants can also be obtained from the suckers of the old ones, and the sooner the better.

Artichokes (*Jerusalem*).—If not planted let it be done immediately; frequent hoeings, and the removing of the weak shoots will assist them.

Asparagus.—Sow, if not already done. The seedling plants of last year are proper for planting in pits or such places, where they may be forced without removal. In cutting for use, bear in mind that it is superfluous to cut much below the surface, the white part not being eatable.

Anise.—Partially thin out the early sowing, and stir the soil slightly.

Basil.—Transplant at the end of the month into a warm rich border, keeping the plants six inches apart; gently water them; keep some plants in boxes or frames, to come in early.

Beans.—Stir and draw up the earth about those above the surface; plant again at the end of the month.

Beet.—If the seed has not come up well, sow again, and more thickly; grow a considerable quantity, as the roots will prove valuable.

Borecole.—Plant every spare corner as soon as the plants are large enough for removal; it is not requisite to prick these out; lose no time in sowing, if not done.

Brussels Sprouts.—The plants preserved for seed will require water; prick out those sown last month, and sow again at once.

Brocoli.—Prick out those sown early, into rich soil, when they have developed the third leaf. Make principal sowings this month, in a good situation, and protect the seeds from birds, by placing netting or branches over the seed beds.

Cabbages.—Sow a few more, and plant out ir every vacant space; hoe and earth up the early crops; if the soil is poor, it can be enriched easily and beneficially with liquid manure, taking care to give it at the roots only, and in a weak state at first; this applies equally to the early, late, and red sorts.

Cardoons.—Sow at the end of the month in a loamy sandy soil, without fresh manure; sow where they are to remain, as they do not transplant very well.

Carrots.—Good crops are often produced from seed sown at the end of this month, but the middle, or early in the month is better, if the weather permits; hoe and thin those sown for early use to three or four inches asunder; thin the main crops to six inches apart: they should be thinned early.

Caraway.—Sow early in the month, on any common soil; it is a biennial.

Cauliflower.—Plant out the whole of the wintered plants on a warm rich border, two and a half feet apart; draw a little earth to those put out last month, and if cutting winds prevail, small spruce fir-branches stuck on the exposed side will shelter them; raise the hand-lights on bricks. Prick out those sown last month, and shade them a little. Water the whole according to the state of the weather.

Celery.—Sow early for the main crop, in a warm spot, in rich mellow soil; if the weather is cold, put a frame or merely a light over the ground. Prick out those sown last month, three or four inches apart; water them, and if warm they will require shading afterwards for a little. Expose fully those which are established.

Celeriac.—Sow immediately in a light rich soil, and thin out when two inches high, to be afterwards transplanted.

Chamomile.—Plant slips now, either with or without roots; water and shade, if dry; the poorer the soil the more flowers are produced.

Chervil.—If much wanted, sow again, as it runs quickly to seed, and the younger it is the better.

Chives.—Increase by division; they are cut close to the ground when used, and are esteemed both in soups and salads.

Coriander.—Sow in an open situation: the seeds are much used in confectionary, and have a carminative and stomachic property; thin the plants to a foot apart, if on rich soil.

Cumin.—Thin out to six inches; it may yet be sown on a warm spot; some use the seeds in bread.

Cress.—Sow twice or oftener this month, and secure quick growth by shelter if requisite. It is a good rule to sow again when the former sowing is breaking through the surface.

Dill.—Thin the plants to a few inches apart; the seeds are medicinal, and also used in pickles.

Fennel.—If the soil about the old plants has been undisturbed it will probably be covered with seedling plants, a few of which may be transplanted at ten inches apart.

Finochio.—Sow the first week in an open situation, in a light moist and rich soil, in deep drills; it is not transplanted, but thinned in the drill to eight inches or so, and a little soil laid up around each plant.

Garlic.—Keep the plants clear of weeds, and do not suffer their growth to be disturbed. The soil should be cleared from the base of the stems.

Kidney Beans.—Next month will do to plant these; in the mean time prepare the ground thoroughly by working it well; a light, rich, and dry soil is suitable. Sow a boxfull thickly now, slightly cover them and set them in heat; these can be planted out by the middle of May.

Leeks are ready to plant out when from six to ten inches high. Choose a deep and rich soil for them, or make it so if not already; when planted they do not require to be firmed, only allow a little soil to fall into the hole with the plants, and leave them. Plant in drills fifteen inches apart, and ten inches in the row. Sow a secondary crop for a late supply.

Lettuces.—Sow every three weeks now, and make two plantings from each sowing; plant them a foot apart in a warm rich sandy soil.

Love Apples.—Pot off those sown last month into six-inch pots, two in a pot, and keep under glass until the middle of May.

Marjoram.—Thin and transplant, say to ten inches apart; it may still be sown on a warm border.

Marygold.—Sow in the first week in any light soil, and thin out to ten inches apart;

this is esteemed by many for culinary purposes.

Nasturtium (*Indian Cress*).—Sow any time this month, either in drills or patches, in almost any soil. They can be made useful as a screen, placing stakes for them to climb over.

Onions.—Hoe when they are above ground; they may yet be sown with success; either roll or trample in the seed. Now is a good time to sow for pickling; any sort will do; sow by the side of a wall, and the thicker the better; they must not be thinned. Transplant the autumn-sown crops.

Parsley.—Thin out to six inches apart; it may be transplanted, and if the crop is scanty so increased; the most curled plants should be selected.

Parsnips must be thinned to ten or twelve inches apart; keep the soil stirred among them.

Peas.—For late crops, the marrows, the blue Prussian, and Auvergne are well adapted; as a general rule, the best time to sow the succession-crops is when the others are just through the ground. Top all the sorts when one foot high, and again when three feet or so; attend to staking in time, adapting the length of the stakes to the sorts. If dry weather prevails give thorough waterings, and put a little of the nitrate of soda in the water—about half an ounce to a gallon of water.

Potatoes may still be planted; avoid cutting the sets and planting them *deep*; do not use rank manure. Hoe and keep the soil open among advancing crops, and give them space. Seedlings may be raised, either with or without heat; many plants may be gathered where the last year's haulm was left to rot; plant them at the usual distance; though large potatoes are not got the first year, an excellent crop of new sorts will be had the second.

Purslane.—Sow now if not done last month; thin out to six inches apart.

Radishes.—Sow again this month; monthly sowings will be sufficient if the place is moist where they are grown.

Rampion.—This being chiefly valuable in winter, the sowing may be deferred until August; clear the ground where it has been growing, as soon as it is disused.

Rhubarb.—A rich soil is indispensable for this crop; seed may now be sown with success; the stalks are ready for use when the leaves are half expanded.

Rosemary may be raised from seed, but it strikes readily from slips, inserted in sandy soil now.

Sage will strike readily now from cuttings; choose the young slips; it is also increased with facility by layers.

Savory.—The main sowing may be made by the middle of the month, upon a light warm border.

Savoys.—Sow the principal crop about the middle of the month; plant out a few at the end of the month; if ground is scarce, they may be planted between beans or even early cauliflowers, but an open rich spot is preferable.

Salsify and Scorzonera.—The main sowing may be made the first week, or towards the middle of the month; if they come up in clusters, thin them early; sow shallow and in drills, about a foot or fifteen inches apart.

Sea-kale may be raised from seed, which is preferable to slips or pieces of the root; sow rather thin, and cover about two inches; as soon as up, thin to a few inches apart; if the young plants are properly attended to, and watered with liquid manure, they will do to force next season.

Scurvy Grass.—Sow or divide the roots now, and give it a light and moist soil.

Skirret.—Sow in the second week, in shallow drills a foot apart.

Spinach, at this season of the year, is often sown between the rows of peas, and the coolness of this situation is in its favour. Still, if ground can be got, this and all crops are better grown by themselves. Thin to four or six inches, and sow monthly.

Tansy is easily raised either from seeds or by division of the roots; any common soil suits it, and a few plants will probably meet the demand.

Tarragon.—Divide the roots, and make the most of it, as it is frequently required for forcing. It is easily struck by cuttings in the summer months.

Turnips.—Sow again early; thin by the hoe to five inches apart as soon as they have formed their rough leaves. At the appearance of *fly* sprinkle the whole with soot, lime, or wood ashes; shelter them a little by laying a few branches over them when brairding.

Vegetable Marrow.—Sow in a frame or under a hand-glass about the 20th, and at the appearance of the rough leaf pot them as cucumbers, and treat similarly.

Water Cress.—This most popular of salads may be simply grown either in streams or pools, or without either, thus:—form four feet beds of strong loam, in a moist situation, plant about six inches apart, and keep in a moist state in summer by watering, and success is certain. Irrigation is commendably resorted to, where quantities are grown.

Winter or Normandy Cress.—Sow in a light rich soil, and thin out to three inches.

Wormwood.—Propagate by slips put in a sandy soil; and plant out in a rich earth; a few plants will now meet the demand.

THE FRUIT GARDEN.

General Directions.—Disbudding, thinning the fruit and blossoms, protecting, grafting; and also cutting down and grafting the inferior sorts; hoeing, and gathering, or destroying of caterpillars, must all be attended to, and will form the leading features of management during this month.

Almonds.—Protection may still be required in a few situations; the quantity of fruit and the shoots left should be adjusted according to the state of the trees.

Apples.—In exposed places protect the blossom of the finer sorts. Look sharply for insects; wash with soft soap and warm water those infested, or likely to be so, with the American blight; for the green fly syringe with tobacco water; for caterpillars resort to hand picking, dredging with the powder of white hellebore, or syringing with a decoction of its roots; do the whole promptly, and persevere until the means are found effectual.

Apricots.—Again disbud and thin, both the shoots and fruit; it may be necessary to annail where any branches or fruit are cramped; two fruits to every square foot is a fair crop for a healthful tree.

Cherries.—The green fly must be arrested early by fumigating or syringing, and dusting the leaves when wet with Scotch snuff; thin the shoots and fruit moderately.

Currants.—In addition to the other modes of killing the aphides, syringing with soot and lime-water is a good method; have the ground neatly hoed among the trees, and if near the border also raked.

Figs.—Lose not a moment if these are not nailed; those shoots which are most forward, may be thinned moderately.

Gooseberries.—Have the ground neatly hoed; the caterpillar must be scrupulously watched; in addition to the other remedies may be mentioned that of dusting the powder of white hellebore root on the foliage when wet, or syringing with a decoction of the same.

Filberts.—Keep thoroughly clean, and rub off a few of the misplaced early shoots.

Mulberries.—From their lateness in producing foliage, they may still be transplanted; choose a spot where they will be surrounded with green velvety turf, on which, if the fruit falls, it will sustain no injury. They are also ornamental trees.

Nectarines. — Proceed with the gradual thinning of wood and blossoms, and, at the end of the month, of the fruit also; two fruits to a square foot is a fair crop, for a tree in ordinary vigour; allow more if the tree is luxuriant, and less if sickly.

Peaches. — The coverings of most wall trees may be taken off at the end of the month, but this depends on the weather, and state of the trees; disbud and thin the superabundant crop. A slight fire may be desirable where flued walls are at command, and if so, keep on the external cover. Mulching transplanted trees may also be requisite, if the weather is dry and searching winds prevail; syringe in the morning, when the fruit is set, with clear soot and tobacco water.

Pears.—The protecting of the early blossoms of the fine sorts in severe weather may still be attended to; and as pears have often bad roots, those trees lately planted may be watered and mulched with advantage. All foreright and redundant shoots must be rubbed off at their first appearance; and so also with an overcrop of fruit.

Plums.—Crops are often lost from an over abundant blossom being allowed to expand; the remedy of duly thinning may be yet partially applied with effect; make provision to lay in young wood.

Raspberries.—Hoe deeply amongst them; some of the early suckers may be removed.

Strawberries. — Have these thoroughly cleaned before the runners begin to spread; but where a stock of young plants is not required, it is better not to allow runners to remain; water if dry, also mulch.

Vines.—Little can be done here; a syringing might be given in the mornings, to assist the breaking of the buds; defer the thinning until next month.

THE FORCING GARDEN.

General Directions.—With the advancing season, increased and unceasing vigilance is necessary. The same principles which ensured success early, will do the same later in the season, with this difference, that the *artificial* means of attaining certain ends are supplanted by *natural* ones, which are more sure and simple. The progress of vegetation and increase of evaporation will render additional waterings necessary; and the sap which is now circulating rapidly, and finding new channels, will have to be conducted, without waste, to the perfecting of the fruit, and building up of the plant, by pruning and regulating; no small skill and attention is necessary to maintain this in free and constant play, allowing at no time any cause to come into operation to produce either a stagnancy, or an over luxuriance. Avoid *extremes* of cold, heat, or food-giving, and all sudden variations.

Asparagus.—Temperature, 60 to 65 degrees by day, and 55 degrees at night. Use every shoot, and if the bed is in a good state, no additional one is necessary.

Cherries.—Temperature, from 55 to 70 degrees by day, and 50 to 55 degrees at night. Syringe gently every morning; remove all foreright and crude shoots; tie in neatly those which remain, if the trees are trained: moisture must be gradually withheld, as soon as they begin to colour, and more air must then be given.

Cucumbers.—Temperature, 75 to 85 degrees by day, and 60 to 70 degrees at night. Syringe those in stoves daily; those in pits and frames not so often, and always in the mornings; look over all every day, and stop and thin; reserve and impregnate one or two good fruits for seed; attend to early shutting up; pot off those for out-door ridges, and sow a few more.

Figs.—Temperature, 65 to 70 degrees by day, and 55 to 60 degrees at night. Continue to disbud; top the young shoots at about six inches long; maintain a very moist atmosphere; any which show signs of ripening their fruit might be removed to the stove; withholding water partially at the roots will partly answer the same end.

Kidney Beans.—Temperature, 70 to 75 degrees by day, and 60 degrees at night. Maintain a moist atmosphere, and syringe daily; water twice a week with clear liquid manure; cease sowing this month for forcing; air freely.

Melons.—Temperature, 80 degrees by day, 70 degrees by night. Look over the plants nearly every day, and watch the flowers opening to impregnate them; below each young fruit, place a piece of slate, and keep the lateral shoots thin, stopping the fruiting ones at two joints above the fruit; do not shade, nor water them over head, except in very scorching weather; liquid manure can be applied now, with good results. Successional plantings and sowings must be regulated according to the convenience and demand; now is an excellent time for both.

Mushrooms.—Temperature, from 55 to 60 degrees. By placing a little spawn in the dung of melon and cucumber beds just before finally earthing up, very superior crops may be raised, while at the same time the most is made of other accommodation; no fire heat must now be given; admit air when required, and keep the house dark.

Musas.—Temperature, 80 degrees by day, and 70 degrees at night, 5 degrees either way will not injure them. Water profusely with liquid manure; have an atmosphere nearly at the point of saturation. Give the advancing suckers a large shift into rich loamy soil.

Nectarines.—Temperature, 75 to 80 degrees by day, and from 55 to 60 degrees at night. Syringe in the mornings or very early in the afternoon. Cut out all rank and luxuriant shoots, and nip off all laterals except where required to fill up; tie the whole neatly in, and where thicker than six inches between, thin them to that distance. The fruit, too, should be finally thinned to about two to a square foot, and more if a vigorous tree.

Oranges should scarcely be forced, yet when in a growing state they luxuriate in a heat of from 60 to 70 degrees by day, and 55 degrees at night. The most handsome form of these plants is as standards, with a clear stem and well balanced head; prune with that in view. If poor loamy soil has been used, water with liquid manure; syringe and keep a moist atmosphere.

Peaches.—Temperature, 75 degrees by day, and about 55 degrees at night. Thin out the shoots so as to have enough to tie in at six inches apart; do not think of divesting the plants of any of their leaves. Give morning or early afternoon syringings, and finally thin the fruit. A thorough watering at the roots is occasionally necessary; and apply with it a little clear liquid manure. If spider or mildew appear, washing the pipes or flues when cool with a little sulphur vivum, is a remedy.

Pine Apples.—Temperature from 70 to 85 degrees by day, and 65 to 70 degrees at night; the bottom heat about 90 degrees. Keep the succession plants somewhat cooler, and give all a moist atmosphere; air every day. Shift those not already done, and renew the heating material, if there is no tank; use a roughish soil of turfy loam and peat, equal parts. Plant a few out on the Hamiltonian system.

Strawberries.—Temperature, 70 degrees by day; 60 degrees at night. Keep them near the light; water profusely all which are not yet ripening; superphosphate of lime may now be given with good effect, or liquid from the stable-yard diluted, will do as well. Tie out the flower stalks, and withhold water as soon as they begin to colour; divest them of all runners as they appear, and bring on the successional stock, as was done with the first crops.

Vinery.—Temperature, 70 to 80 degrees by day, and from 65 to 70 degrees at night. Withhold moisture when the vines are in flower; thin and tie out as early as practicable. The early house should be showing signs of ripening, when water must be gradually withheld, and give more air when mild. Keep stopping the laterals, but allow none of the other leaves to be taken off. Those in pots should be kept in a light situation, and watered freely until they begin to colour. Keep shifting those raised from eyes as they fill the pots, and prevent all from being submitted at any time to any sudden changes, which are sure to result in bad consequences.

THE FLOWER GARDEN AND SHRUBBERY.

Sow annuals by way of succession—a little of everything worth growing, but give due prominence to those acknowledged to be superior and suitable, for whilst *variety* is desirable, it is quality and not quantity which satisfies most.

Plant and Transplant, both hardy and tender annuals; also biennials and perennials generally; attend to these latter promptly.

General Directions.—Have the soil thoroughly prepared to receive the seeds and plants, by being well wrought, whether it be rich or poor; if it be in either of these extreme conditions, try and modify it immediately. The lawns must be swept and rolled, and if worms and moss are found to prevail, lime-water and soot will counteract both. The rake as well as the hoe will now be required, yet too great a fineness of soil on the top is objectionable, and must be avoided. Choose if possible showery and cloudy weather for planting, or meet the case by watering and shading. Be still afraid of frosts injuring the tender growth of such plants as start early.

Slugs are effectually destroyed with quick lime; they may also be decoyed by handfuls of fresh grains from the brewery, or what is perhaps as good, a little bran placed below an inverted flower-pot, raised enough to allow an easy entrance.

Alpines.—Increase the supplies of water. Plant out what can be spared in romantic spots, but keep duplicates of the better sorts in pots.

Anemones.—Sow early on a loamy soil of medium texture and richness; separate the seed by mixing with silver sand; sow thin, and cover slightly, and shade if the sun is scorching. The autumn-planted old plants will be in splendour; from the fine sorts take away all the weak and imperfect flowers, and water liberally in dry weather.

Annuals.—Harden off and plant out those of the hardy kinds kept in frames, and sow again early. The half-hardy kinds must be shifted and put out by the end of the month in a good situation; preserve the best to flower in pots. Those transplanted protect by inverted pots, or fir or other boughs, from wind, cold, and sun. To keep off vermin strew quick-lime around them.

Auriculas.—Give additional water to those in bloom; also shade more. As the prize sorts require constant attention and operating upon, erect a stage or bench in a sheltered corner, on which to place the plants under hand-glasses, raised upon pots or bricks six inches high; over the whole make as it were a tent of transparent cloth: reduce the pips to seven of the most equal and promising; adjust them by tucking in small pieces of moss or wadding; preserve uninjured the powder of the favourite kinds. Protect against cold, and cutting winds, night and day.

Carnations.—Pot now, in eight, nine, or eleven inch pots; give thorough drainage, and put some turfy soil above the crocks; attend to filling the interstices between the ball and the pot; water gently, and place in a sheltered spot or on stages. Plant out the worst in rows two feet apart and one between.

Clematis and Deciduous Climbers will be benefited by going over them, and thinning the shoots as with fruit trees; tie and nail in as required.

Crocus.—At the end of the month the leaves may be tied up in knots out of the way of other plants, until well ripened; meanwhile the ground can be sown or planted.

Dahlias.—Proceed with shifting and propagating. The striped sorts are beautiful for the borders; a few may be planted at the end of the month in good situations; they delight in a rich soil and plenty of water. Give plenty of air to those in frames, but close them at night.

Fuchsias.—Remove the coverings by degrees; thin out the shoots, and in most cases train them with one leading stem.

Hyacinths.—Slightly protect early in the month; the fine sorts are worthy of a tent over them.

Hollyhocks—Plant them in masses or singly in rich soil; a circular figure filled with them is admirable.

Jasmines, Honeysuckles, &c.—Thin out the shoots, before they require to be nailed, or tied, and attend to that when necessary.

Laurels, Laurustinus, &c.—Cut out all shoots destroyed by the frost; the head of the bush should be well balanced; this should be done immediately.

Lobelias are all worthy of attention. *L. fulgens* and *splendens* should be separated and potted afresh into light soil, and placed in a hot-bed for a few weeks; prepare a place for them by deep digging and richly dunging.

Mignonette.—That kept in pots may be planted out the middle of the month, to give immediate effect; thin out the early sowings.

Mimulus, (Musk plant, &c.)—These plants are all easily grown, and beautiful either as single plants or in masses. The musk-plant forms an excellent summer bordering, and will succeed in a shady place.

Pansies.—Form new beds, both of seedlings and standard varieties; plant the old plants in masses in the borders; sow seeds, and forward in heat. Propagate the fine sorts; the young suckers from the roots strike very well in gentle heat, also under a hand-glass, or even without any covering at all, if put in a cool shady place.

Picotees.—Treat in every way as carnations.

Pinks may still be got in; cow-dung, leaf-mould, and loam, in equal parts with sand, form an excellent compost; strong manures, as bullocks' blood, can be used with advantage. The blanks in the beds must be filled up, and all the plants must have a proper covering of soil at the roots.

Polyanthus, Cowslip, &c.—These do best planted out, and can be lifted at any time; strew the ground around them with quick lime. Sow seeds on any spare piece of ground.

Primroses.—The rich double purple and white varieties, which are in bloom, may be taken to the greenhouse. Plant and sow the commoner kinds in abundance wherever there is a shady bank; also by the walks in woods and shrubberies.

Ranunculus.—Stir up the surface of the soil, and draw out every weed; slight protection may be still required.

Roses.—Mark the appearance and progress of the opening buds; if the grubs have been amongst them pick them off assiduously. Those which are unpruned cut back to two eyes, to prolong the season of blooming.

Stocks.—Many may be planted out, and others brought on to follow them. German stocks sown now will bloom fine in autumn; the soil must be rich and well worked.

Tulips.—Stir (early) the soil to about four inches in depth, and guard scrupulously against frost and sharp winds; cover every night.

Violets.—Strew over and about the old plants with fresh soil, to encourage runners, from which young plants will issue; they can be transplanted when well rooted.

WINDOW GARDENING.

General Directions.—Be not over kind: the plants must have a good deal of air to secure health and sturdiness of growth; they will be improved by being set outside on fine days, and taken in in the afternoon. Syringe them in the mornings. Shift immediately into larger pots, if not done last month; or, if wanted to flower early, they should be stinted in the small pots, and watered with liquid manure. Keep down aphides by syringing with tobacco water.

Begonias should be kept rather warm; shift into larger pots when the roots touch the sides; increase the supply of water and light.

Cacti, if kept moderately warm, will flower well; do not give much water.

Calceolarias must be kept clean, and neatly staked up; tie loosely, and allow the sticks to remain at the length to which the stems will probably reach.

Camellias.—Continue to shift as soon as they pass out of bloom, and keep them rather close and warm; old bare plants can be cut back, as they shoot out freely.

Cinerarias.—Shade from the sun when in flower; give plenty of air; when the flowers are past, cut back the plants, and put them in a cool place, from which they may be planted out next month, or potted anew.

Cyclamens.—After growing a little when they have done blooming, allow them gradually to become dry, but at no time thoroughly so.

Evergreens.—Pot afresh, if not done, and place in an open though not a conspicuous situation, to make good growth for next season.

Geraniums.—Give a little liquid manure, if the pots are filled with roots and sending up flower buds; air freely, and shade those in bloom.

Hyacinths.—Those in flower must be shaded from the sun, and when past, many of the late bulbs may be planted out in a good situation, and will do for the flower garden next autumn.

Mimulus (Musk plant), will suit admirably for the window, either in boxes or pots; it prefers a rich loamy soil, and to be kept watered when growing.

Myrtles, Oranges, &c.—Give plenty of light and air; if they are growing rapidly the water must be increased; syringe and sponge the leaves often.

Roses.—Keep cool and free of insects Those which are required to form large plants may be again shifted, and all the flower-buds taken off.

Primula sinensis (Chinese Primrose.)—Place those of the double varieties raised from cuttings near the glass, and keep them cool; preserve the good varieties only for seed; a few may be sown at the end of the month.

Wardian Cases.—Many annuals, as the thunbergias, sensitive plant, &c., if properly treated, will be ready to be introduced; see that they are perfectly free of insects. The creepers must have wire supports for their branches. In addition to other suitable plants previously named, may be mentioned the aloes, apicras, haworthias, &c., in small pots. Attend to having all the plants in a growing condition before being put in; it is easier to *keep* a healthful case of plants than to *make* one.

PITS AND FRAMES.

General Directions.—This is a particularly busy month in this department. Put up new beds of fermenting material, and have it well sweetened previously: give additional linings to those where the heat is declining; some prefer having the frame raised on branches or faggot wood, and supplying all the heat by linings. Have a good store of soils, crocks, and pots, under cover and ready for use. Sow, propagate, pot, harden off, &c., and do all with spirit.

Annuals.—The main sowings of tender annuals, such as cockscombs, amaranths, egg plants, balsams, &c., should be made; pot off the early sowings; shift into larger pots as soon as the roots touch the side of the pot. The cockscombs are an exception to this rule; they must be kept in small pots until they show the comb, then shifted, and grown on in strong heat.

Half-hardy Plants, as verbenas, fuchsias, pelargoniums, &c., may still be propagated, but the sooner the better. Pot off the rooted cuttings, and keep close and warm for a few days; harden off those further advanced, and have them ready to plant out next month.

Hardy Perennials. — Plant out without delay, and give thorough waterings after planting.

Forcing Pit.—Always keep a moist atmosphere, and as soon as the flowers begin to open, remove the plants into a cooler house, as they are almost sure to flag, if not removed before they expand. Beware of watering with cold water. Attend to the raising of a successional stock of plants for forcing. Mark the sorts of geraniums, &c. that do best in heat, and propagate accordingly.

THE GREENHOUSE.

Temperature.—From 45 to 55 degrees by day, and 35 to 45 degrees by night, allowing 5 degrees more when sunny.

Ventilation.—Air still more freely both at top and below, but the sharp cold draughts must be avoided.

Watering.—Occasional syringings in the mornings may be given, and the passages and stages must be kept damp. The plants must be watered more liberally as well as more frequently.

Potting.—Continue to pot the various kinds of plants as they go out of flower; and where they do not bloom just yet, and are likely to require a shift, it had better be done at once, if not attended to. There are always some plants that require shifting; and the soft-wooded things and annuals must be kept growing, and the roots never allowed to get matted until they are in their flowering pots.

Aloes, and succulents generally, will require an increase of water, and should be shifted, if not already done; thorough drainage and a good fresh turfy loam, with lime rubbish, suits them.

Agaves, and large succulents, should be watered well, but not often; they should be set out on the lawn next month; sponge over the leaves if dirty.

Alströmerias require plenty of air and water, and continual attention, to see that no insects attack them.

Amaryllis.—Place these in heat successionally, and put them in a cool house when about to flower.

Annuals. — Keep these growing without allowing them to become drawn: all are the better for a gentle heat, but keep them near the glass, and air daily; stake them, set them thin, and have them perfectly dry before the forenoon sun strikes them.

Azaleas.—Place in a cool situation, except a few which may be required early. The forced sorts (North American), may be planted out in peat soil, to be again ready in autumn for potting. The Indian sorts, after shifting, must be put in heat, and kept growing.

Calceolarias. — Fumigate often, but not strongly; give all possible light and air; also stake and tie them up neatly, but do not cramp them with the ties. The first stakes should be so long that the plants may not require others.

Camellias.—Water well, but do not saturate the soil: keep those which were shifted close and warm; all the others require light and air profusely. They require a moist atmosphere to flower perfectly.

Cape Bulbs, as ixias, gladiolus, &c., will, many of them, be in flower, and will require a cool place and shade: nearly all do well in cold frames, with fresh air made to play in amongst them, daily, and nightly, too, in some cases.

Cephalotus follicularis (New Holland pitcher plant).—If the house is very airy this must have a hand-light or bell-glass over it; it grows in the west of England out of doors with this protection.

Cinerarias.—Keep those in bloom slightly shaded; shift those which are being grown on, and have them in a cool frame or pit: many may be planted out next month; cross, and save the seed of the best.

Chrysanthemums may be placed in the open air; propagate by layers and cuttings, and only increase the sorts which are considered choice.

Crassulas, and allied plants, must be kept in the warmest part of the house, where they will not be exposed; water them moderately.

Cyclamens.—Discontinue watering in quantity, where the plants have done blooming and have made their growth; let them get partially dry to repose them.

Epacris.—Make the air to play amongst the plants, when of a soft and mild nature; those just done flowering may be yet potted; cutting them back some time previous to shifting them is commendable.

Ericas.—The quick and easier grown sorts flourish well in sandy peat, mixed with a little loam, having plenty of lumps of crock, sand, or charcoal, mixed throughout; keep air on night and day. Those in flower must be removed to the conservatory, but only for a day or so at a time.

Fuchsias.—Keep warm, and water with liquid manure; perfect specimens can be grown in this way in one season.

Gompholobiums, and other tender creepers, must be looked over, and kept neatly tied up and clean.

Haworthias, &c.—Shift, if not done; shake away part of the old soil, and replace it with brick rubbish and good loam; keep them a little warmer.

Leschenaultias will do well in a heat of 50 degrees, and if the plants are small this will soon improve them; place them near the light.

Lilium japonicum (Japan lily).—Add a little fresh lumpy soil about the stems, and keep the atmosphere moist, and yet have the leaves all dried in the middle of the day.

Mignonette.—Bring on the successional crops; do not crowd them, and they will grow strong and fine.

New Holland Plants.—Keep these rather cool; many will be ready next month for being placed in the open air. Those early shifted may be the better for a larger pot now. Shift such as require it, that are not likely to bloom for a few weeks.

Oranges.—Maintain an even temperature about them; and a moist and warm one is preferable.

Oxalis.—Coolness and an occasional syringing suits them; they require a steady attention to watering, and to be gradually dried when past growing.

Pelargoniums.—Continue to propagate from the good sorts, and those only; the temperature must not fall below 42 degrees at night; a final shift may be given to those required to bloom in August and September.

Primulas.—Do not allow a yellow leaf nor a seed pod to remain, unless to secure seed from improved varieties; throw the bad sorts away at once, when they are past flowering.

Proteas, Banksias, and Dryandras.—Give air constantly, unless it be a very cutting wind; be very careful in watering, to keep them regularly supplied.

Rhododendrons in bloom must be taken to the conservatory; a slight shading will prolong the duration of the flowers; keep all the others in a cool and moist place.

Roses must be fumigated often; also watered all over; give them plenty of air. Some will require a larger pot.

Salvias.—Such as *S. patens* do best raised from seed; bring on the old plants gradually, and increase by propagating for house culture such kinds as *S. splendens*.

Stapelias.—Increase the supply of water, and give them the additional necessaries of potting afresh, and extra warmth; they make fine growth in a hotbed frame.

Tropæolums.—Tie these again, but do not aim at overneatness in this respect; when the pots are well filled with roots, give them a supply of liquid manure.

THE CONSERVATORY.

Temperature.—From 55 to 65 degrees by day, and from 45 to 50 degrees at night.

Ventilation.—The quantity and manner of giving the air must be regulated by the temperature externally; if cutting or hard winds prevail, ventilate sparingly, and chiefly by the top, but if mild and soft, admit air profusely.

Watering.—Water no two plants alike, but according to their individual wants; healthful, growing, and flowering plants must have a great deal more than resting and sickly ones. Syringe the plants not in flower, and keep the house more moist.

Arrangement.—It is easy now to make a gay display; but it is as difficult as before to place every plant to the best advantage. Avoid crowding or crushing any plant, and especially the handsomer ones. Make conspicuous those which are symmetrical, and well grown, and keep turning them daily.

Routine.—Clean daily, and once a week have additions of gay plants, and remove such as are fading. This rule cannot be strictly attended to, as there are many flowers that must be put and taken away within a week, still these are exceptions, and do not alter what should be a general practice.

THE PLANT STOVE.

Temperature.—From 70 to 80 degrees by day, and about 65 degrees by night.

Ventilation.—Be careful in admitting air, as the sharp winds would affect the young and tender shoots now forming. Top air is most safe, but in warm and mild weather the front sashes will also require to be opened; and a little air every night is of great benefit.

Watering.—Plants recently potted do not require much water; those whose pots are more or less filled with roots, and those in, and about to flower, require most; damp the floors and walls of the house morning and evening, and syringe daily in bright weather.

Potting.—Never become weary of looking over the plants, and attending to their individual requirements as regards pot room. Those which are wanted to bloom early and in small pots do not shift; but when large specimens are wanted, do not, if possible, allow them to show flower until the plant is a perfect specimen; and this can only be attained by not allowing them to be in any manner *checked;* therefore, before the roots twine thickly around the soil within the pot, enlarge it, and when in a proper state no breaking of the ball is necessary; indeed, in many cases, the crocks need not be taken away; all such subjects require watering, shading, and to be kept close for a few days.

Soils of a richer nature will require to be added to the usual compost for annuals such as cockscombs, balsams, amaranths, egg plants; have all under cover and ready for use.

Insects.—Make strenuous exertions to overcome the early attacks of insects on the young shoots, and even smoke or syringe with tobacco water the house, to *prevent,* as well as *destroy* aphides, &c. To sulphur part of the pipes or flues will kill red spiders, &c.; and keeping the atmosphere moist and of a sweet nature will counteract the probability of the plants ever becoming swarmed.

Achimenes.—Attend strictly to having the foliage dry before the sun strikes upon them, as from inattention to this, the leaves get blotched. Many of them should now be shifted into the pots they are to flower in.

Allamandas, Beaumontias, and the strong growing creepers, must be regularly gone over and tied, watered, and kept clean; cuttings will strike freely in heat.

Alpinias, Hedychiums, and other reedy plants, must be grown on in a steady moist heat, if not planted out; some will require a shift, and those whose pots are filled with roots may have liquid manure safely.

Aphelandras, Justicias, Ruellias, &c. — Several of the bare plants should again be topped, but this can be overdone, and weak shoots induced, which will bear imperfect flowers; still in many cases it must be done; cuttings will strike easily.

Begonias.—All will now be in a state of activity; this must be encouraged. Nearly all will do in a gentle bottom heat, and must be kept in a very moist and warm atmosphere; after shifting they do not require watering at the roots for a few days.

Burchellias.—If a stock is on hand, a few should be put into heat periodically; they delight in moisture and a moderate warmth, and as they flower when quite young, they are worth propagating extensively, which can be done now.

Cacti. — The flowering plants must be brought in successionally. The young stock must be grown in a moderately moist and high temperature; liquid manure can be given with benefit. Give air freely; otherwise they push weakly. Cuttings are the better for drying for a week or so before potting them.

Cinnamomum (Cinnamon tree).—Put in a light and tolerably warm situation; they do well in a loamy soil.

Clerodendrons.—Pot off the seedlings and shift the old plants; keep all moist and warm, and allow plenty of room; a little bottom heat is desirable.

Climbers.—Great taste is requisite to allow them to hang down gracefully, as well as to tie them around a trellis neatly; do both, and thin out the weak and crowded shoots.

Daturas.—Shift those struck from single eyes, and keep the whole growing in a rich soil and moist heat, and trained to one stem; they are very subject to spider and aphides, but by repelling their *first* attacks, great power is attained over them.

Erythrinas. — Put in heat periodically; keep growing, and have them thinned, some to four stems, others to three or two, and some even to one; they can be planted out next month, and will form magnificent objects.

Euphorbias.—An ordinary share of moisture and richness of soil suits these; keep them rather warm. Keep stopping and propagating from *E. jacquiniflora;* a stock for winter is very valuable.

Ferns.—Give a general overhaul if not done, and shift most of them into a soil of rough peat and loam, well drained with charcoal; keep them moist, and shade a little in bright weather. Seed can be sown at any time under a hand-light or bell-glass; no covering of soil is required.

Gardenias.—Keep always in a moist and warm situation; shade a little; study to make and keep them clean.

Gesneras, Gloxinias, &c.—Plunge in a little bottom heat from dung, and give plenty of light. Thin the Gesneras to three or more of the strongest shoots; shift as may be necessary.

Hippeastrums, Crinums, Pancratiums, &c. —Encourage these to grow; give a gentle bottom heat if possible, and keep them moist and warm.

Ipomœas.—Pot off the annuals, and again shift those sown early; sow again, and plant out as many as there is room for.

Ixoras.—Keep in a steady moist heat, and near the glass; stir the soil about them, and keep clean; a little bottom heat from dung is just what they like.

Jasmines, Rondeletias, Brunfelsias, &c.— Rest when done flowering, by keeping them cool with little water; assist forward those in a growing state, and stop and tie out the young and unformed plants. *J. hirsutum* and many others are worth having a stock of, and can be propagated now.

Lantanas.—Harden off those to be planted out; unless they are forward they will not have a great effect: prepare a bed with peat soil, and in a place where new colours are wanted.

Grow a quantity for flowering in-doors; by stopping and shifting they can be made quite attractive.

Luculia gratissima.—Increase as much as possible without spoiling the specimen plants; a plant or two may be kept excited to propagate from. The established plants must be brought gradually on, and kept rather cool.

Lycopodiums.—It is well to give these attention, as they are valuable for the Wardian case, or for light bordering, or planting in large masses; they are at all seasons lively; keep them moist and shaded.

Malvaceous plants.—Grow in a moist heat and rich soil; the annuals may be grown to any size, but as that is rather a defect, they will bear a slight stopping; encourage the shrubby sorts.

Manettias, and other tender climbers, keep in due bounds by tying and thinning in time, and keeping down insects; this is almost daily work.

Melastomas. — Give these both pot and head room, and light, and moisture, in abundance; they strike freely from cuttings.

Melo Cacti, should now be kept close, warm and moist; and have liquid manure occasionally; they make good growth in a hotbed frame.

Nepenthes (Pitcher plant).—Have a perpetual and steady moisture rising about them; the roots, though they will stand in water, need not be kept so wet.

Neriums, may now be flowered at pleasure, by increasing the heat and moisture; still retain a stock in a cool state, in frames, for later flowering.

Nymphæas.—Increase the heat, and keep the leaves always floating, and watered over head; if there are any dry bulbs, not yet excited, put them in without delay. To rest them well, is the secret of success.

Palms. — Almost saturate the soil with liquid manure once a week; syringe gently and often, and keep up a continued moisture.

Polianthes (Tuberose).—As they advance, take away a few of the smaller suckers, and pot separately; give plenty of manure, moisture, and light; they have been known to do well, planted out of doors this month, in very good situations.

Thunbergias.—Maintain a moist atmosphere; keep in ordinary sized pots, and, if red spider does appear, sulphur the cool pipes near them. Sow again; pot off the previous sowings as required, and trellis them, or plant out early.

Vincas.—When these are vigorous, they may be again topped, and finally shifted, observing as a general rule, never to pot until the young shoots are again started, and never to top but when the roots and shoots are in action. *V. rosea ocellata* is the most superior, and should be increased now.

THE ORCHID HOUSE.

Temperature. — The Indian house, from 70 to 85 degrees by day, and 65 to 70 degrees at night. The Mexican house from 5 to 10 degrees lower.

Ventilation. — Give air at the top only; the Mexican house may have a little in mild nights; remove all the artificial coverings; have the shading material in perfect repair, and use it on bright days.

Watering.—Maintain an increasing and perpetual moisture in the atmosphere. The terrestrial species will require a good deal of water, and will luxuriate in weak liquid manure applied weekly. Syringe the blocks and baskets, and let the water *fall on* the plants in them; avoid syringing these and every other plant *under* the leaves, except in extreme cases.

Potting.—Such of the plants as have not been repotted, should be attended to before they begin to grow freely; and where it is not desirable to disturb them, so far as to repot them, or put them in fresh baskets, they will derive benefit from the application of a portion of fresh potting material.

General Directions.—It is proverbial that this class of plants are most easy of cultivation. The chief desiderata is a taste for them, and a desire to excel in their culture. The obstacles will excite and not discourage the energies of the devoted admirer of nature, and who is determined to have nature's beauties in their fairest form. This rule is general and applies universally; and, when attended to, is of more value than many of the best hints, given in the best manner. The lodgment of moisture about the young shoots must be prevented, or they will be liable to rot off, especially if subjected to a fall in the temperature. Drips from the roof falling upon the young shoots are also very hurtful. A very moist atmosphere, such as these plants require when in a free growing state, should not be accompanied by a low degree of heat.

Æschynanthus. — These plants associate well with orchids: look to their roots immediately, preparatory to starting them: if in pots, shift them into fresh soil; if on blocks, renew the material about the roots. Introduce them to the warm part of the house, and supply them liberally both with heat and moisture, until they have made their growth. Attend to the regulation of the branches as they are developed.

Catasetums should be repotted when their young shoots are about an inch or so in length.

Cyrtopodiums.—These magnificent plants may be fresh potted; give them plenty of pot room, and vigorous heat and moisture.

Stanhopeas, which have not been growing, may be expected to flower soon, and in such case should not be repotted or disturbed, for fear of injuring the flower-buds. The same may be said of all those plants which throw their flower-stems downwards.

MISCELLANEOUS NOTES.

Grafting wax is formed by melting equal parts of resin, and bees wax, with tallow, enough to make it moderately soft. When used it is melted and laid on with a brush, just thick enough to form a coating. If properly made, it is hardest when cold, and melts with a small amount of heat.

Woodlice.—These are best trapped, and then destroyed; or where toads or lizards are encouraged, they will keep them under. Any hollow body, open at one end and closed at the other, serves as a trap; such as a flower pot, or a piece of a hollow stem, or a turnip or a potato hollowed out: where the pots are used, a little short hay should be put in them. The traps may be laid among the plants, or placed where the woodlice congregate; and they should be daily examined, and the captured insects crushed, or killed by boiling water.

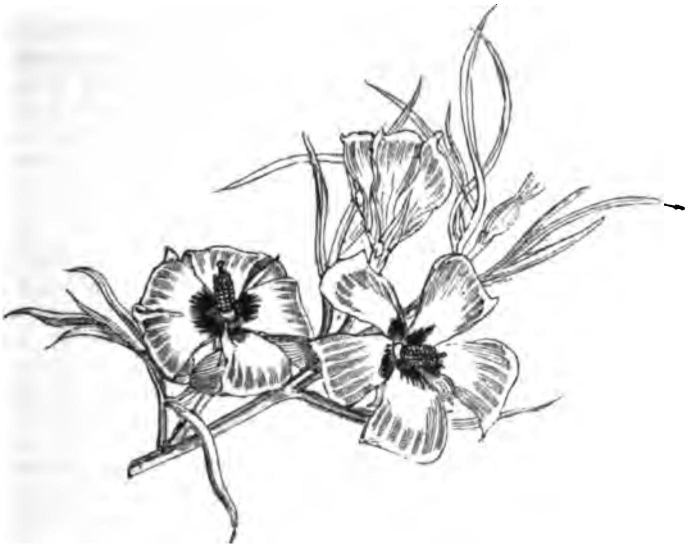
Moss on lawns may, if required, be removed by watering with a solution of ammoniacal liquor, from the gas works, in the proportion of one gallon to four gallons of water, applied through the rose of a watering-pot. If the moss has been encouraged by imperfect drainage, the latter must be rectified. Where, however, moss occurs on lawns, that are not unpleasantly wet, it forms a beautifully soft and verdant turf.

Aphides.—The different kinds of aphis or plant-louse are very troublesome. Such plants as calceolarias, cinerarias, pelargoniums, &c. suffer much injury from the green fly if they are not speedily dislodged; and other kinds attack out-door crops. For in-doors, or wherever the smoke can be confined, fumigation with tobacco is the best plan of destroying them; and a calm evening is best suited for the operation. The houses, or other places, are to be quite closed, and then filled with the smoke; and next day the plants should be syringed with clean water. The tobacco should be laid over a few *red-hot* cinders in the bottom of a flower-pot, and then covered over with a good thickness of *damp* short hay, the pot being elevated upon two bricks, so that the draught of air may reach the hole at the bottom. In places where the smoke is offensive, and generally out of doors, the plants may be well syringed towards evening with a liquid made by adding to the tobacco liquor of the shops four times its bulk of water; in the morning this is to be syringed off with clean water. Whichever remedy is adopted it is safest to have it repeated once or twice within a day or two.

Garden Tools.—A multiplicity of tools is by no means required in a garden, but the work always pays for using good and proper tools. The execution of garden labour is much improved, and the labour itself lightened, by proper care of the tools employed; after use, every day, they should be made perfectly clean, and hung up or placed away in a situation appropriated to them; each being kept distinct, so as to be easily laid hold of when again wanted for use.

Cuttings.—As a general rule, cuttings of what are called soft-wooded plants, such as fuchsias, calceolarias, coronillas, &c., will root freely, if planted in well-drained sandy soil, and the pots placed without bell-glasses, in a hotbed, where there is a brisk, but mild bottom heat, and where the sashes are kept moderately close, perhaps opened two or three inches for an hour or two in a day. Hard-wooded plants, as heaths, or camellias, should be planted in sand, over a layer of sandy soil; the pureness and fineness of the sand should be proportioned to the size of the cutting; these should be covered by bell-glasses, and set where the bottom heat is very slight, or quite absent. With the larger cuttings, it is a good plan to sink a small pot in the centre of the cutting pot, against which the cuttings may be planted, as they are found to root better than when isolated in the soil. Shading must in all cases be attended to. Remove no more leaves from the cuttings than is absolutely necessary; and cut them clean through, close below a joint at the base. Cuttings of hardy plants generally succeed under common hand lights, in sandy soil; and of most trees and shrubs, in a sheltered shady spot without covering.

Labels.—None are better than those made of zinc, the labels being durable, and the writing indelible. The face of the zinc should be rubbed quite clean and bright, with fine sand paper, and the writing effected with a quill pen, and Burrows and Thom's chemical garden ink, which is the best preparation sold. An ink for zinc labels may also be formed by mixing together one drachm of sal ammoniac, half a drachm of lamp black, and ten drachms of water. The most convenient form is that of a parallelogram, transversely attached to a stalk to support it, and slightly bent back, so as to bring the surface to an angle that will readily meet the eye. The most economical form, is that of an acute triangle, which does not cut to waste.



FUGOSIA HAKEÆFOLIA.

(Hooker.)

HAKEA-LEAVED FUGOSIA.

THE genus Fugosia embraces certain species formerly called Hibiscus, the former name being given in honour of Bernard Cienfuegos, a Spanish botanist of the sixteenth century. *Fugosia hakeæfolia* is a very ornamental plant, closely allied to *Hibiscus lilacinus*, both natives of Australia.

The plant under notice forms a shrub of four or five feet high, growing erect, and but sparingly branched, the branches twiggy, dark green, and quite smooth, as also is every part of the plant. The leaves are rather few and a good deal scattered, varying much in their form; some, the lower ones, are twice pinnatifid (bipinnatifid), the uppermost ones are entire, that is, without any lobes, and the intermediate ones are usually three-lobed (trifid); the upper entire leaves, and the segments of the others, are narrow linear, somewhat fleshy and slightly grooved above. The flowers grow singly out of the axils of the leaves, and are large and handsome; they are of the malvaceous or mallow-like form, the petals of a soft purplish lilac colour, paler below, and each marked at the base with a dark red-purple radiating spot, which adds greatly to the rich appearance of the flowers. When fully expanded the flowers are between three and four inches across, but the petals soon become reflected backwards; they, however, remain many days expanded, which is somewhat unusual among this family of plants; they are produced profusely during the summer months, and flower at this period, even when newly raised from seeds in the spring.

It was raised by Messrs. Lucombe, Pince, and Co., of Exeter, in the spring of 1846, from seeds received from the Swan River colony in Australia. Native specimens have also been received from King George's Sound, and Flinder's Bay.

It is a green-house shrubby plant, and should be potted in a compost of sandy loam and leaf mould, intermixed with a sufficient quantity of sharp gritty sand, to render the mass quite porous. Being a free growing plant it requires plenty of pot room when growing; the pots must, however, be well drained, and there is no better material for this purpose than lumps of charcoal broken to about the size of walnuts, a large piece of potsherd being laid in the bottom of the pot; some portions of the charcoal may also be thrown in among the compost when the potting is going on. For a full-sized plant a pot not less than eighteen inches, and from that to two feet in diameter, should be allowed; they will, however, flower in smaller pots, but then the plants must be frequently topped while young to keep them dwarf; this topping must be discontinued two months before blossoms are expected. The plants require a liberal supply of water when growing, and are benefited by occasional applications, say once a week, of weak manure water. In the autumn they may be partially cut down, re-potted into smaller pots, and kept during winter in a warm part of the greenhouse, and very slightly watered.

Cuttings may be struck early in spring, the plants being previously placed in a warm pit, to induce them to throw out the necessary young shoots; these young plants may be grown to flower in the same way as the older plants, and are preferable to seedlings, when the smaller sized flowering plants are desired. When seeds can be obtained they should be sown at the end of February in a hotbed, and grown on in a cool hotbed (that is, a hotbed where the bottom heat is mild, and plenty of air is admitted daily) for a month or two, and then taken to the greenhouse and treated nearly the same as tender annuals; in fact, whenever seeds can be secured, it may be grown exactly as one of these, and would form a very valuable ornament to the greenhouse during the latter part of summer, when the ordinary greenhouse plants are placed out of doors.

Fugosia hakeæfolia, was formerly known under the name of *Hibiscus hakeæfolius.* It belongs to the natural order Malvaceæ; and in the Linnæan arrangement to Monadelphia Polyandria.

ON HASTENING THE BEARING OF FRUIT TREES.

Among the many experiments prosecuted by Mr. Knight, the late president of the Horticultural Society, some were made with the view of hastening the bearing of fruit trees, by grafting them on vigórous stocks. One of these detailed in the *Transactions* of that Society, related to the walnut, the mulberry, and fruit trees of that class. In describing his experiment on the mulberry, Mr. Knight says: "I had not any young plants of this tree, and therefore could only make the experiment with scions of one year old, and of these I had only two, which had sprung from the roots of a young tree, in the preceding year. These were planted in pots, and raised to the bearing branches of an old tree, by placing them on the top of poles placed in the earth; and they were grafted, by approach, with parts of the bearing branches. The young grafted tree bore fruit the third year, and continued annually productive. In the spring I introduced it into my Vinery, where its fruit ripened, in the greatest state of perfection. Both the walnut and mulberry tree succeed so ill when grafted, unless by approach, that I can scarcely recommend attempts to graft them in any other way; but when they succeed by other modes of grafting, nearly the same advantages will probably be obtained; the habit of the bearing branch is, however, least disturbed by grafting by approach. The Spanish chestnut succeeds readily when grafted in almost any of the usual ways, and when the grafts are taken from bearing branches, the young trees afford blossoms in the succeeding year: and I am much inclined to think, from experiments I have made on this tree, that by selecting those varieties which ripen their fruit early in the autumn, and by propagating with grafts or buds from young and vigorous trees of that kind, which have just attained the age necessary to enable them to bear fruit, it might be cultivated with much advantage in this country, both for its fruit and timber. I have tried similar experiments on many other species of trees, and always with the same result; and I entertain no doubt that the effects of time might be thus anticipated in the culture of any fruit which is not produced till the seedling trees acquire a considerable age. For I am thoroughly confident, from very extensive and long experience, that the graft derives nutriment only, and not growth, from the young stock in which it is inserted; and that with the life of the parent stock the graft retains its habit and its constitution."

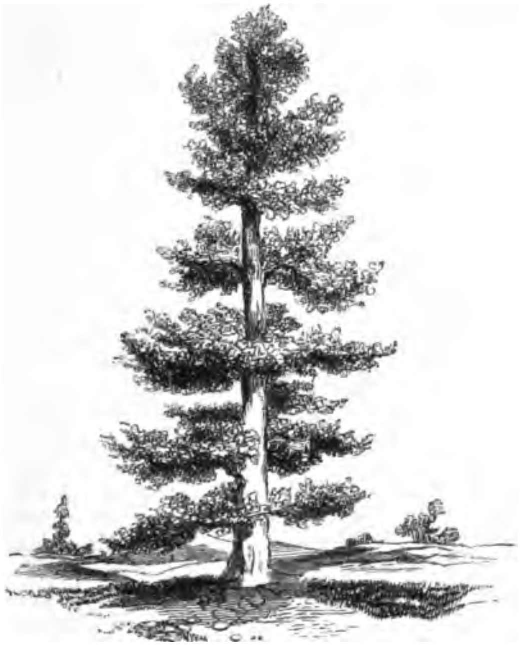
This practice of Mr. Knight is analogous, both in its principles and object, to that of budding or grafting seedling varieties of fruit trees upon healthy trees in a matured bearing state. In this way seedling fruits that would probably take ten or a dozen years to arrive at a fruit-bearing state, may often be fruited in the third year from their being raised. The mode of uniting the two plants should be that which is most successful with the particular kind of fruit; thus budding would be proper in the case of peach trees, and grafting would be preferable for apples or pears.

The difference between the two plans is this:—Mr. Knight's object was to produce a young plant from the bearing branches of a fruit tree, in such a way that it would go on bearing when detatched as an independent tree; and this it would do by having at once ascendency over the roots, so that the latter had not power to excite it into luxurious unfruitful growth. In the case of uniting seedling plants with old established trees, the object is to remove the former from the ascendant influence of their own roots, which causes luxuriant growth —proper for the establishment of the tree, but as yet unfavourable to its fruitfulness—and to bring them within the influence of the elaborated sap of a mature tree, which does not favour excessive growth, but the formation of blossoms and of fruit.

Mr. Knight's plan may be practically applied with advantage where small plants for fruiting in pots are required of any of those kinds of fruit which naturally grow large before they arrive at a bearing state.

CONIFERÆ.—THE PINUS, OR PINE TREE.

The species here given are those in which the leaves usually grow in clusters of five together—rarely four. This group contains some of the finest species that are known. The present series, with those at pp. 77 and 125, complete the genus Pinus.



Pinus Cembra.

* * * *Leaves five in a Sheath.*

a. Scales of cones thickened and spineless at apex.

Pinus oöcarpa, Schiede (egg-fruited Pine).—Leaves in fives, very slender, and from eight to twelve inches long. Cones round, ovate, smooth, hard, with truncated scales.

A native of the mountains and valleys of Mexico, attaining to the height of 40 feet, but considered to be too tender for the climate of England. The plant is as yet scarce.

Pinus leiophylla, Schiede and Deppe (smooth-leaved Pine).—Leaves five together, very slender and pendent, thickly set on the branches, and at the extremities of the shoots in close tufts, about five inches long, light green, slightly serrated, and covered with dotted lines; sheaths of a bright brown, deciduous. Cones two inches long, ovate, pendulous, on a very short stalk, with depressed truncate scales. Seeds very small.

A tree of 60 feet high and upwards, discovered by Schiede and Deppe, on the cold regions of Mexico, and which gives every promise of proving hardy in this country. The leaves resemble those of the Weymouth Pine, to which it is no doubt related. There are plants at Dropmore from 15 feet to 20 feet in height; and it is also in the Pinetums at Chatsworth, Hendon, and Woburn. The tree has a tufted, irregular outline, and cannot fail to be in request as a first-rate ornamental object. The timber is said to be valuable for various purposes.

Pinus Montezumæ, Lambert (Montezuma's Pine).—Leaves five together, rigid, lanceolate rough-edged, glaucous green, bearing dotted lines, and about six inches long, with persistent sheaths. Cones bright brown, ovate, oblong, about the same length as the leaves, with very thick truncated scales, elevated at the apex.

A native of Orizaba and other mountains of Mexico, to the height of 11,000 feet above the sea, and probably suited to the open air throughout Britain. The species is confounded by some writers with *P. occidentalis*, the cones of which are only three inches long. The tree, in its native habitations, is represented as attaining the height of 100 feet, covered with a thick, cracked bark, like the common Scotch pine. It is as yet scarce in collections.

Pinus filifolia, Hartweg (thread-leaved Pine).—Leaves five together, slender, acutely triangular, and upwards of a foot in length. Cones almost stalkless, nine inches long, about three inches in diameter at the base, ovate-acuminate, with pyramidal depressed scales.

A noble tree, found by Mr. Hartweg, in the province of Guatemala, a mountainous country which extends along the coast of the Pacific, bounded by Vera Paz and Chiapa, the Honduras, and Nicaragua. Of its habits, timber, &c., very little is yet (1846) known. A plant was tried at Rozelle, Ayrshire, in 1845; but "it was destroyed by the winter."

Pinus Pseudo-Strobus, Lindley (false

Weymouth Pine).—Leaves in fives, slender, bright glaucous green, very fine. Cones four inches long, and nearly two inches in diameter in the middle, ovate, whorled.

A fine tree, found on the mountains of Mexico, having the appearance of *Pinus Strobus*, but differing from that tree in having cones in which no resemblance can be traced to those of the Weymouth Pine.

Pinus Apulcensis, Lindley (Apulco Pine).—Leaves five, slender, six inches long, and glaucous. Cones pendulous, ovate, and whorled, from four to six inches long, covered with minute elevations, and having erect, tapering scales, sometimes hooked.

A tree growing to the height of 50 feet, on slopes of hills and in ravines in Mexico. It flourishes in the hot and unwholesome air of Acapulco, where it was first discovered, and is therefore not likely to prove hardy in this country.

Pinus Orizabæ, Gordon (Orizaba Pine).—Leaves in fives, very slender, sharp-pointed, triquetrous, from eight to nine inches long, of a light green colour, and thickly set on the branches; sheaths persistent, about half an inch long, rather smooth and entire. Cones in clusters of four or five, pendulous, from four to five inches long, and two and a half inches broad at the base, straight and tapering to a point, with elevated, slightly hooked scales, half an inch across, each enclosing two small seeds, with wings nearly an inch in length.

A tree of moderate size, inhabiting the mountain of Orizaba, in Mexico. In habit and foliage this pine much resembles *P. Pseudo-Strobus*, but the cones are very different from those of that kind, and are more like those of *P. macrophylla*, though not more than half their size. The cones have a footstalk nearly an inch in length. The branches are numerous, spreading, rather irregular, slightly incurved, and slender, with rough bark, and large, imbricated buds, totally destitute of resinous matter. It has been recently (1846) raised in the garden of the Horticultural Society, but no positive evidence as to its hardiness has yet been obtained.

Pinus Russelliana, Lindley (Duke of Bedford's Pine).—Leaves five together, very long, slender, with sheaths upwards of an inch in length. Cones seven inches long and two inches wide near to the base, bearing pyramidal obtuse scales.

A large tree, native of Mexico, on mountains near Real del Monte, and found to be tolerably hardy in the climate of Scotland. Specimens are in the garden of the London Horticultural Society, and in the Pinetum at Rozelle, Ayrshire. It is a highly ornamental and vigorous looking tree.

Pinus Devoniana, Lindley (Duke of Devonshire's Pine).—Leaves five together, very long and slender, with sheaths nearly an inch long. Cones ten inches in length, pendulous, horn-like, growing singly, about three inches across near the base, and tapering to somewhat less than two inches across at top. Scales polished, obtuse.

A noble tree, from seventy feet to eighty feet high, found on elevated districts, between Real del Monte and Regla, in Mexico, and bearing there the name of *Pino blanco* or *P. real*. Not likely to prove serviceable as a timber tree in this country. The young shoots are thick and succulent, being nearly an inch in diameter, and evidently require a high temperature to ripen them.

Pinus Hartwegii, Lindley (Hartweg's Pine).—Leaves four or five together, six inches long, and slender. Cones in pendulous clusters, oblong, obtuse, four inches long, with depressed scales, truncate, and of a greyish brown colour.

A tree found by Mr. Hartweg on the mountains of Mexico, growing to the height of from forty to fifty feet. Considered rather too tender for the climate of England; but not yet sufficiently tested in this respect.

Pinus Grenvilleæ, Gordon (Lady Grenville's Pine).—Leaves in fives, robust, triquetrous, thickly set, and fourteen inches in length on the wild specimens; sheaths persistent, nearly an inch and a half in length, rough and scaly. Cones pendulous, solitary, sixteen inches long, and three inches and a half broad at the base, quite straight, tapering from the base to the point, with slightly elevated blunt scales, three quarters of an inch broad. Seeds, medium sized, with broad two-cleft wings.

A noble tree, found plentifully on the highest parts of the Cerro de San Juan, or Saddle mountain, near Tepic, in Mexico, where it grows from sixty to eighty feet high. The branches are irregular and very robust, with large imbricated non-resinous buds, thickly set with long narrow brown scales. The leaves a good deal resemble those of *P. macrophylla*, but are rather longer. The long straight cones and stout foliage, at once distinguish this pine. In Mexico, it is called by the natives "ocote macho" or male pine. Young plants have been recently (1846) raised in the garden of the Horticultural Society, where it was sent by Mr. Hartweg. It is expected to be hardy.

Pinus Gordoniana, Hartweg (Gordon's Pine).—Leaves in fives, rather slender, triquetrous, dense, light green, and longer than any others; sheaths persistent, about an inch and a quarter long, rough and scaly. Cones on footstalks half an inch long, pendulous, mostly solitary, from four to five inches long, and an inch and a half broad at the base, slightly curved, with slightly elevated scales, half an inch broad; seeds small, with narrow wings.

A handsome tree, found sparingly on the colder parts of the Cerro de San Juan, or Saddle mountain, near Tepic, in Mexico, where it grows from sixty to eighty feet high. The branches are numerous, regular, not very robust, with very scaly non-resinous buds of moderate size. This pine has the longest and finest foliage of any kind yet introduced. The cones are quite destitute of resin. In Mexico the natives call it "ocote hembra" or female pine. It has been recently (1846) raised in the garden of the Horticultural Society from seeds sent by Mr. Hartweg, and is expected to prove hardy.

b. Scales of cones thickened and spiny at apex.

Pinus occidentalis, Swartz (West Indian Pine).—Leaves five, about seven inches long, slender, of a pale green; sheaths about half an inch in length, remaining on the branches. Cones ovate, oblong, half the length of the leaves, stalked, with rounded angular scales, terminated by a small sharp prickle.

A native of the mountains of St. Domingo, about 6,000 feet above the sea, where the climate is cold. Notwithstanding this, it does not stand the open air in England, though in the south of France it is expected to become acclimatized.

Pinus macrophylla, Lindley (long-leaved Pine).—Leaves in fives, robust, very long (fifteen inches). Cones scattered over the tree singly, about six inches long and three inches across near the base, of an ovate tapering form, with scales surmounted with strong hooked blunt prickles.

A native of the north of Mexico, on mountains, where it assumes the character of a small tree only.

c. Scales of cones flat and compressed at the apex.

Pinus excelsa, Wallich (lofty or Bhotan Pine).—Leaves five together, six to seven inches long, loose, slender, glaucous green, narrow, and pendulous. Cones longer than the leaves, smooth, cylindrical, attenuated towards the apex, and surmounted with broad shining, light brown, wedge-shaped scales. Young buds conical, ending in a somewhat sharp point. Seeds ovate, with a bony covering, very much resembling those of *P. Strobus*, but with a thicker and stronger shell.

A lofty and beautiful tree, well known throughout Upper India under the name of *Kyle*, *Chilla*, and *Kuel*. It was introduced about 1823, and there is no donbt of its proving a great acquisition to the British arborist, both as a timber tree, and as a most graceful object on the lawn and mountain side. It is perfectly hardy in Britain, and in any free soil grows with great rapidity. In the neighbourhood of Mussourie, whence the writer has had packages of seed, this pine is found in company with the *Cedrus Deodara* and *Picea Webbiana*. The tree has a striking resemblance to *P. Strobus*, but the former has longer and richer foliage, and the young shoots are flatter and thicker. The soil it prefers is a deep sandy loam, in which it displays itself to great advantage. For the sake of those who have friends in India, and who wish to import seeds of this tree, it is important to state that there is no necessity for having them sent by the overland mail; for on account of the bony covering in which the kernels are enveloped, a six months' voyage does not at all impair them. Steeping the seeds in warm water for a few days previous to sowing, is an excellent plan. They grow extremely well sown in the open air, in sandy loam, and covered to the depth of half an inch. They require to be kept uniformly moist, and if shaded from the mid-day sun by a few dead branches, they will succeed all the better. The best time for sowing them is the end of April; and if properly treated, they will be fit to be potted in the last week of September following. If potted at this date, they will furnish themselves with new roots before the winter sets in, and thus be the more able to withstand its severity. The country is already full of beautiful specimens of this tree. It has been planted in considerable numbers on the estate of Sir Edward North Buxton, in the parish of Runton, Norfolk, where it thrives luxuriantly. Mr. Locke, of Rozelle, gives it as his opinion that "the plant delights in free air and a good breeze."

It is impossible to state what it will become in this country as an ornamental object. Its perfect hardiness and rapidity of growth give promise that it will at any rate form a large tree. There is only the impress of beauty upon it now in the usual outlines of youthfulness. We have no dark forest sides of this species; few trees of it which tempests have vexed; and none moulded into the picturesque forms of extreme age. Throughout Hindostan it is called Raesula, or King of the Firs; and Dr. Royle states, "that travellers in the Himalayas frequently call it the Weeping Fir, from its remarkable drooping branches." One-year seedling plants are sold at 2*s.* per dozen; and those a foot in height at from 6*s.* to 9*s.* per dozen. (1847.)

P. Strobus, Linnæus (Strobus, or Weymouth Pine).—Leaves in fives, of a fine light bluish green, nearly four inches long, slender, without sheaths. Cones long and narrow, with thin smooth scales rounded at the base, on short peduncles; similar to those of *P. excelsa*, but smaller; seeds with wings one inch in length.

A very tall tree, from 120 to 180 feet, introduced in 1705, and growing freely in some districts of England, though not attaining a height beyond 100 feet. A native of North America, delighting most in somewhat rich soils, on slopes of hills and in moist valleys near to rivers. It attains its largest dimensions in New Hampshire, in the state of Vermont, where, according to Michaux, it accommodates itself to a variety of soils, except such as consist of pure sand, and such as are under water occasionally. The finest and largest specimens he found in valleys, into which the soil had been washed from the mountains: in such places the species reaches to the height of 150 feet, the trunk at the surface of the ground being about five feet in diameter. In such situations it unites all the valuable properties by which it is characterized, and especially those of fineness of texture and lightness. The wood of this tree is in very general use throughout America, and large quantities of it are sent to England under the name White Pine. It is, however, far inferior in quality to that imported from the north of Europe, being soft, liable to the dry rot, and lasting but for a short time. Mr. Copland, in his Evidence before a Committee of the House of Commons, says, with reference to this tree, "It is not allowed by any professional man under government to be used, nor is it ever employed in the best buildings in London: it is only speculators who are induced to use it, from the price of it being much lower than the Baltic timber."

As an ornamental tree, this pine stands very high. Gilpin, so full of extreme artistical ideas, has indeed condemned it because its stem rises with perpendicular exactness, and exhibits nothing of that furrowed appearance which we find in the Scotch pine, &c.; or, in other words, because it is not what is called a painter's tree, looking but indifferently on paper when compared with those of bolder growth. Luckily, such fancies are on the wane; and the beautiful in nature, whether of rugged or smooth outline, has its worshippers, who are careless enough as to whether or not it is suited to take form under the pencil of the artist. The pine under consideration may in fairness be described as a beautiful tree, having a tall straight stem, with branches very regularly disposed on all sides, and forming a most desirable object in the softer parts of park scenery, and on well kept lawns near to dwellings.

Varieties.—These are scarcely worth recording, as they differ so little from the species. In all probability, the most important one is that mentioned by Dr. Wallich, growing at Bainpa and Toka in Nepal, and referred to by Royle in his *Illustrations*. Plants of it are not yet in England.

P. S. brevifolia has shorter leaves than the common tree, and appears to be the same as *P. S. compressa*, of continental catalogues.

P. S. alba, a plant recognised by the London Horticultural Society, has very light leaves and bark. A specimen in the Arboretum at Chiswick is about thirty feet high.

Pinus monticola, Douglas (mountain Pine).—Leaves five together, rigid, three and a half inches long, and obtuse, of a glaucous green colour. Cones very much resembling those of *P. Strobus*, only somewhat thicker, about seven inches long, and of an ash-yellow colour with loose pointed scales.

A fine tree discovered by Douglas, and introduced in 1831. From its close resemblance to *P. Strobus*, there appears to be no good ground for retaining it as a distinct species. The cone, which is held by botanists as one of the chief indications of a distinctive difference, is so like that of *P. Strobus* that it is difficult to distinguish the one from the other. The tree is found on the high mountains at the Grand Rapids of the Columbia, and on the rocky banks of the Spokan river in California. There is a plant in the garden of the Horticultural Society; and there are likewise fine specimens at Hendon Rectory and at Elvaston Castle. It has been found hardy enough to stand in the climate of Scotland.

Pinus Lambertiana, Douglas (Lambert's Pine).—Leaves five together, stiff, bright green, rough, and without sheaths. Cones cylindrical, thick, fifteen inches long, with loose, broad, rounded scales. Seeds like those of *P. Pinea*, large, oval, nearly an inch in length, and edible.

An enormous tree, found by Douglas in sandy plains where no other vegetation exists, in New Albion, on the north-west coast of North America, and growing to the extraordinary height of 200 feet. Its discoverer thus describes it:—"One specimen which had been blown down by the wind, and which was certainly not the largest, was of the following dimensions: its entire length was 215 feet; its circumference, at three feet from the ground, was fifty-seven feet nine inches; and at 134 feet from the ground, seventeen feet and five inches." The trunk is unusually straight, and destitute of branches about two-thirds of its height. The bark is uncommonly smooth for such large timber, of a light brown colour on the south, and bleached on the north side.

It appears that the trees of this species do not form dense forests, but are scattered throughout sandy valleys and plains, which to all appearance are incapable of supporting vegetation. Douglas states that the resin which exudes from this tree when partly burned loses its usual flavour and acquires a sweet taste, and that it is used in that state by the natives as a substitute for sugar. The seeds are eaten by the natives, both in a raw and roasted state; and in some parts the resident Spaniards have them served up as a dessert. Those who have eyes only for the fantastic and picturesque, would consider this tree deficient in beauty. It is "straight as righteousness," and therefore would be rejected for the want of some wavy outline to give a fancied effect to the stem. If extreme height is entitled to any respect, this plant commands consideration; and many, at least, would see in it something of the majesty of Nature, and the power of the Great Creator. There are fine specimens at Dropmore, Chiswick, Chatsworth, Hackney Nursery, and in the Royal Botanic Garden, Edinburgh.

Pinus Ayacahuite, Ehrenberg (Ayacahuite Pine).—Leaves five together, fine, three inches long, slender, sharp-pointed, and of a beautiful glaucous colour, resembling those of the Weymouth Pine. Cones about thirteen inches long, slender, with broad obtuse scales about two inches long, standing open, with the points more or less bent downwards.

A tall tree, resembling the Weymouth Pine, but reaching to a greater height and producing resin more plentifully. It is found on the slopes of the mountains in Guatemala, and in valleys, where it becomes a tall straight tree. There is little probability of its proving hardy enough for the climate of Britain.

Pinus Cembra, Linnæus (Cembran Pine).—Leaves five together, short, rigid, glaucous green, with deciduous sheaths. Cones oblong, the length of the leaves, with thin scales which, when young, are pubescent; seeds larger than that of any other Pine except *P. Pinea*, wingless, and containing an eatable kernel, which is said to yield excellent oil.

A hardy ornamental tree, found on the sides of mountains in Siberia, Tartary, Italy, and Switzerland, and introduced into this country in 1746, by Archibald, Duke of Argyle. Some of the finest trees were at Mill Hill; but as Smith observes, "after the deplorable havoc made there by ignorant or negligent possessors, it is impossible to say whether these trees still exist." When young, it grows slowly; but in free loamy soil it proceeds, after the first ten years, at a more rapid rate. It is easily known by the regular spiral form which it assumes. The tree in this country is elegant in appearance; and throughout the elevated tracts of country which it affects in Siberia and Switzerland, it is grand and picturesque. It is quite hardy in England; but on account of its growing but indifferently unless in deeply-trenched sandy loams, it will never become common on account of its properties as a timber tree. The idea of its being well adapted to clothe the tops of many hitherto almost barren mountains in Scotland, not only with fresh and luxuriant vegetation, but with valuable timber, as suggested by Mr. Lawson, in his *Manual*, is quite chimerical. Even under the most favourable circumstances, it is accounted rather a triumph to grow it of a size fit to be used in carpentry, and joists and beams of it are only to be had from its native habitats.

Various plans are resorted to in order to insure a full crop of plants, a thing which is seldom accomplished. Some sow the seeds in the autumn in which they are received, when a few of them appear in the spring, and the remainder in May following. A better way is to steep the seeds in warm water for a fortnight before sowing, and then to sow them in pans placed in heat. The soil which they seem to prefer is sandy loam, without any mixture of peat.

Varieties.—*P. C. sibirica* (Siberian Stone Pine or Siberian Cedar), has the cones larger and longer than in the species; the leaves shorter, and the plant still more stunted-like. The tree has an open head with tufted branches, and in its native country reaches a great height—sometimes 120 feet. Of this variety Mr. Locke of Rozelle says, "This with us is the most thriving of all the Cembræ, and I might also say the most desirable. No pine I know possesses more attractions, not only from the remarkable symmetry of all its proportions, but also from the beauty of its fine green leaves."

P. C. helvetica (Swiss, Cembran, or Stone Pine), is a vigorous growing variety, with short rounded cones, and longer leaves than the foregoing. Common in British arboretums, and certainly best entitled to be cultivated. In some parts of Switzerland it grows about 7000 feet above the sea, and, as might be expected, it has proved itself quite hardy in the climate of Scotland. Its wood is finer and more fragrant than that of the species: it retains its smell for many years, and is said to be so offensive to moths, bugs, &c., that they are not to be found in rooms where it is. Referring to this variety, Mr. Locke of Rozelle says, "the annual growths for several years are about nine inches."

P. C. pygmæa.—A very dwarf, shrub-like plant, more curious than useful, and found only in few collections. Some idea may be formed of its prostrate habit from the fact that at Hopetoun House, near Edinburgh, a plant 100 years old is only six feet high.

Living specimens of the following have not been seen by the writer, though it is believed some of them have found their way into England :—

P. contorta, Douglas (twisted-branched Pine).—Leaves two together, about two inches long, in a dark short sheath. Cones rather longer than the leaves, which resemble those of *P. austriaca.*

A tree found by Douglas in swampy ground not far from the sea coast, near Cape Disappointment in North-west America, and thought to be hardy enough for the climate of this country. Cones were sent by Douglas to England in the years 1825, 6, and 7, but from those no plants were raised. A cone is figured in Loudon's *Arboretum Britannicum*, p. 2292.

P. squamosa, is a plant noticed by Bosc; but several botanists consider it only one of the numerous varieties of *P. sylvestris*, and most probably *P. sylvestris uncinata.* It is cultivated in the French nurseries; but in England it has failed to attract attention unless amongst those few cultivators who are fond of slight varieties.

P. turbinata is another of Bosc's varieties, instituted from his having seen a plant in the garden of Petit Trianon. The leaves are two in a sheath, scarcely one inch long, glaucous, and thickly set on the branches. The cones are in groups, longer than the leaves, with square spineless scales. According to Bosc, it is probably a native of North America.

The foregoing section includes some plants remarkable for their beauty and grandeur. As many of them are of recent introduction, it would be premature to pronounce any opinion as to how far they may prove of real use for the various purposes to which pine-timber is applied in this country. Their ornamental character has been already sufficiently tested. As many of the species are from Mexico, inhabiting alike the valleys and mountains, it has been thought by several botanists that on account of the great disparity of climate in which the trees stand, the produce from such trees must present a like difference in the constitution of the plants raised, some being much hardier than others. At any rate, it has been clearly proved in several pinetums, and especially in that of Rozelle, in Ayrshire, that amongst various individuals of the same species some have withstood the winters without protection, whilst others are with the greatest difficulty preserved with the closest shelter. The inference, therefore, is, that before any opinion should be pronounced as to their fitness for the open air in this country, a fair trial should be given to several plants of the same species. Similar remarks apply to those pines from the Himalayan districts. Whilst on elevated parts, near to the tops of the mountains, there is biting frost, in the valleys the climate is insufferably hot; and it so happens, that from the trees which are of easiest access, in valleys and in slopes, our supply of seeds is taken.

One of the great trees of commerce is included in this section—the Weymouth pine, flourishing throughout the vast countries bounded on the south by New Jersey, and on the north by a part of Nova Scotia. Throughout North America a great proportion of the houses of settlers is built entirely with its wood; and in this country, along with its kindred from Nepal, it forms a beautiful park ornament.

NOTES ON FLOWERS AND FLOWERING PLANTS.

CLINTONIA PULCHELLA, *Lindley* (pretty Clintonia). — Lobeliaceæ § Clintoneæ. — A pretty dwarf annual plant, forming a little tuft of a few inches high, or when grown in pots, hanging over the sides; the leaves are small, linear, and stalkless; the flowers are shaped like those of a lobelia, large for the size of the plant, and grow singly in the axils of the leaves, on rather long stalks; the two upper petals are clear rich blue; the three lower ones yellow at the base, then white, and the remainder—about half—blue: the seeds are very minute. A native of North-west America. Introduced in 1831, by Douglas, to the garden of the Horticultural Society. Flowers in July and August, when sown in March. *Culture.* —Should be sown in pots set in feeders of water, and placed in a hot-bed, in September for spring flowering, and in March for the summer; light rich moist soil; propagated by seeds.

EUTHALES MACROPHYLLA, *Lindley* (large-leaved Euthales).—Goodeniaceæ § Goodenieæ. —A perennial with an erect herbaceous stem, which attains the height of three feet or more, and branches out in a forked manner into a loose spreading panicle, which often forms a mass of flowers as wide as the height of the plant; the leaves are oblong, coarsely toothed, large at the base, but gradually lessening upwards. The flowers are very handsome, about an inch across, with a short tube, divided into five obcordate segments of a bright yellow, with a dash of crimson in the centre of the two upper divisions; each division has a thickened lance-shaped centre, bordered by a thinner wavy margin. A native of South Australia. Introduced 1839. Flowers in June, and generally continues blooming on till November. *Culture.*—Requires a greenhouse, grows well in loam and peat; propagated by cuttings placed in slight heat.

PENTSTEMON MINIATUS, *Lindley* (vermilion Pentstemon).—Scrophulariaceæ § Antirrhinideæ-Cheloneæ.—A pretty half-shrubby perennial plant, growing about two feet high, with much the appearance of the scarlet-flowered var. of *P. gentianoides*, grown in gardens. It has small ovate leaves, and loose few-flowered racemes of bright vermilion coloured tubular flowers, paler in front, and marked in the throat with crimson streaks; the flowers are club-shaped, divided at the end into five almost triangular segments, of which the two upper ones are erect, and the next on each side spreading at a right angle. A native of the north of Mexico. Introduced in 1846. Flowers from July to September. *Culture.*—Nearly hardy, requires a frame in winter; sandy loamy soil; propagated freely by cuttings in spring or autumn, or by seeds. (74)

PRIMULA MUNROI, *Lindley* (Capt. Munro's Primrose).—Primulaceæ § Primulidæ.—A pretty alpine perennial, growing eight or ten inches high, with a bulbous base, and a tuft of pale green, heart-shaped leaves, on long footstalks, from among which rises the erect flower-stem, having at the top several large white blossoms, with a little yellow round the eye; they are an inch across, and deliciously fragrant. The plant is a good deal in the way of *P. involucrata*, but is altogether larger. Native of the mountains of the north of India, at an elevation of 11,500 feet, and growing in the neighbourhood of water. Introduced in 1845. Flowers from March to May. *Culture.*—Requires a frame, or at least to be kept cool and shady in summer, and rather dry in winter; loam and sandy peat; propagated by division of the plant, or by seeds. (75)

GONGORA BUFONIA, *var. leucochila* (white-lipped toad-skinned Gongora).—Orchidaceæ § Vandeæ-Maxillarideæ.—This differs from *G. bufonia*, in its paler purple colour, and in having a white lip. It is pseudo-bulbous, throwing up several large broad lance-shaped leaves, and produces long drooping racemes of insect-like blossoms, which appear in the spring and early summer months. A native of Brazil. Introduced before 1844. *Culture.*—Requires a hot moist stove; planted in baskets among turfy peat, and suspended; propagated by division of the plant. (76)

NEPENTHES RAFFLESIANA, *Jack*, (Sir S. Raffles' Pitcher plant).—Nepenthaceæ.—A very curious plant, with a fibrous root, and long trailing stems, which require to be erectly supported; the leaves are alternate, the lower ones crowded and lanceolate, the upper ones more remote and oblong; in the adult state, they are smooth, and have the midrib elongated into an urn-bearing cirrhus or tendril. The tendrils of the lower leaves are not twisted, but hanging straight from the apex, and terminate in large ventricose pitchers or urns (ascidia), which are greenish, and richly spotted with purple, having two rows of fringes down the front, and surmounted by an ovate lid (operculum) attached to a long neck-like prolongation of the urn; the upper edge of the urn is inverted and beautifully streaked, giving a pectinated appearance to the inner edge. The tendrils of the upper leaves have one or two spiral twists in the middle, and terminate in long funnel shaped urns, not fringed as in the others. The flowers are reddish purple, and grow in a thick spike-like raceme, at first terminal, but afterwards becoming axillary from the stem shooting past; the upper leaf next the flower-spike never bears a pitcher. A native of Singapore. Introduced in 1845. Flowers in (summer or) autumn. *Culture.*—Requires a moist stove; to be potted in lumps of peat with moss, or rotten wood; propagated by cuttings. (77)

SIPHOCAMPYLUS MICROSTOMA, *Hooker* (small-mouthed Siphocampylus).—Lobeliaceæ § Lobeleæ.—A perennial plant, with erect branched stems, from two to three feet high, and alternate ovate shining leaves with glandular serratures: the flowers grow in umbels at the end of the shoots—forming an umbellate-corymb; they are tubular, curved, and contracted at the mouth, two and a half inches long, downy, and of a rich scarlet colour. A native of New Grenada. Introduced in 1846. Flowers throughout the autumn and winter, and "seems to be one of those plants one may reckon to have in bloom all the year." *Culture.*—Requires a cool stove, or warm greenhouse; sandy loam, and leaf mould; propagated by cuttings, or by seeds, which soon make flowering plants. (78)

BRUNFELSIA NITIDA, *var. jamaicensis* (Jamaica shining-leaved Brunfelsia).—Scrophulariaceæ § Salpiglossideæ.—An erect shrubby plant, ultimately attaining four or five feet in height, with large alternate obovate-lanceolate leaves, most numerous near the ends of the shoots, of a somewhat leathery texture and glossy; the flowers grow from the axils of the upper leaves, and consist of a long narrow cylindrical downy tube, with a large spreading limb, three inches across, of five obovate roundish wavy lobes. Native of Jamaica. Introduced in 1845. Flowers in July and August. *Culture.*—Requires a cool stove; peat and loam; propagated by cuttings in sand, under a glass. (79)

TILLANDSIA BULBOSA, *var. picta* (painted bulbous Tillandsia).—Bromeliaceæ.—A small clustered epiphytal plant, with short swollen bulbiform stems, leafy at the base, the leaves a span or more long, awl-shaped, leathery, rigid, terete in consequence of the sides being incurved; they are dark green, but the upper ones, which become gradually smaller, are richly tinged with scarlet and yellow, becoming green, however, after flowering; the stems are terminated by racemose spikes of long three-petaled purple flowers, enclosed in scarlet bracts. A native of Jamaica. Introduced in 1845. Flowers in the winter. *Culture.*—Requires a stove, and to be planted in an open basket, among moss and decayed wood, and suspended; propagated sparingly by division. (80)

PHARBITIS CATHARTICA, *Choisy* (purging Pharbitis).—Convolvulaceæ § Convolvuleæ.—A slender twining plant, apparently annual, with smooth branching stems, alternate, remote broadly cordate, smooth leaves, (sometimes entire, but usually three-lobed,) bearing flower-stalks from their axils, each producing one, two, or sometimes three flowers. The tube of the flowers is white below, rose purple above, funnel-shaped, with a spreading limb varying in colour from reddish purple to deep violet blue. The plant furnishes a milky resinous coagulating juice, which is profusely purgative. A native of St. Domingo, Porto Rico, Mexico, and New Grenada. Introduced in 1845. Flowers in the autumn. It is the *Ipomœa cathartica* (Poirret), and *Convolvulus portoricensis* (Sprengel). *Culture.*—Half hardy, or requiring a greenhouse; light rich loam; propagated by seeds. (81)

SCUTELLARIA CORDIFOLIA, *Bentham* (heart-leaved Skull-cap).—Lamiaceæ § Scutellareæ.—A sub-shrubby species, with nearly erect branching four-sided stems, growing from one to two feet high, opposite large downy cordate toothed wrinkled leaves, and long terminal whorled racemes of orange-scarlet flowers, consisting of a slender curved funnel-shaped tube, two-lipped at the extremity, the lower lip much larger than the upper one. Also called *Perilomia cordifolia* (Schlechtendahl), and *Scutellaria splendens* (Klotzch). A native of Misantla, and other parts of Mexico. Introduced in 1844. Flowers in September and October. *Culture.*—Requires a greenhouse; light loamy soil; propagated by cuttings or seeds. (82)

DEUTZIA STAMINEA, *R. Brown* (wing-stamened Deutzia).—Philadelphaceæ.—A small deciduous shrub, with short close branches, ovate or ovate-lanceolate serrated leaves, and moderate sized clusters (cymes) of flowers at the ends of the shoots; they are very numerously borne on all the lateral twigs along the principal shoots, and are white and sweet-scented, composed of five spreading oblong petals; it is very ornamental when in blossom. Native of high mountains in the north of India. Introduced in 1841. Flowers in May and June. *Culture.*—Hardy, growing freely in common soil; propagated by cuttings of the half-ripened young shoots planted in sand, and placed in a close frame; or by layers. (83)

BRAVOA GEMINIFLORA, *La Llave* (twin-flowered Bravoa).—Amaryllidaceæ § Amarylleæ.—A perennial plant with a pear-shaped bulbous root, keeled, narrow, slightly lanceolate leaves, about a foot long, and a slender stem, two or three feet high, furnished with a spike of distant flowers on its upper half; the flowers grow in pairs, are about an inch long, curved downwards, and are of a red or dull scarlet colour. A native of Mexico. Introduced in 1836. Flowers from May to August; also known as *Cœtocapnia geminiflora.* (Link and Otto.) *Culture.*—Requires a greenhouse; sandy loam, dryish in winter; propagated by cuttings or parting the plants. (84)

FOURCROYA LONGÆVA, *Karwinski* (long-lived Fourcroya).—Amaryllidaceæ § Agaveæ.—A woody-stemmed plant, rising to the height of forty feet, furnished with long narrow leaves, and terminated by a spike or pyramid of flowers thirty feet high, and from twenty to thirty feet in diameter at the base; the flowers are in six segments, white, and innumerable. A native of the summit of Mount Tanga in Oaxaca, 10,000 feet above the sea. Introduced in 1838. Flowers in May. *Culture.*—Requires a greenhouse; rich loam; must be carefully watered in the winter while indoors; propagated by side shoots when produced. (85)

PODALYRIA BUXIFOLIA, *Lamarck* (box-leaved Podalyria).—Fabaceæ § Papilionaceæ-Podalyrieæ.—An erect, branching shrubby plant, with broadly ovate leaves, under an inch in length, and rather large, broad, butterfly-shaped flowers, of a rich rose colour, either growing singly or in pairs. A native of the Cape of Good Hope. Introduced in 1790. Flowers in May and June. It is also called *Podalyria glauca* (De Candolle), and *Hypocalyptus glaucus* (Thunberg). *Culture.*—Requires a greenhouse; peat and loam; propagated by cuttings in sand under bell-glasses, or by seeds. (86)

CYRTANTHUS COLLINUS, *Ker* (hill Cyrtanthus—Amaryllidaceæ § Amarylleæ.—A bulbous plant, with narrow strap-shaped glaucous leaves, about eight inches long, and a flower-stalk crowned by about nine pendulous flowers; the flowers are tubular, swelling near the middle, and divided at the mouth into six segments; they are of a poppy scarlet colour. A native of the Cape of Good Hope. Introduced in 1816. Flowers from May to August. *Culture.*—Requires a dry airy stove; free loam; no water after the leaves die; propagated by offsets or seeds, but more commonly by new importations. (87)

STROBILANTHES SABINIANA, *Nees* (Sabine's Strobilanthes).—Acanthaceæ § Ruellidæ.—A sub-shrubby plant, growing from two to three feet high, with large opposite ovate acuminate leaves, red beneath, and which also exhibit the remarkable peculiarity of one of each pair being smaller than the other; the flowers are interminal and axillary, rather loose spikes, and are funnel-shaped, with a curved tube, and spreading five-lobed limb, of a bluish lilac colour. A native of Nepal. Introduced in 1826. Flowers from March to July. Also called *Ruellia Sabiniana* (Lindley). *Culture.*—Requires a stove; loamy soil; propagated by cuttings placed in a hot-bed. (88)

Paxtonia rosea, *Lindley* (rose-coloured Paxtonia).—Orchidaceæ § Epidendreæ-Bletidæ.—A pseudo-bulbous plant, with plaited lance-shaped leaves, a foot long, and an erect flower-scape springing from the base of the bulbs, and growing about as high as the leaves; these stems bear several flowers towards the top; the flowers are half an inch across, and of a pretty rose colour. A native of Manilla, one of the Philippine islands. Introduced in 1837. Flowers from May to September. *Culture.*—Requires a stove, and to be potted in turfy loam, leaf-mould, and sand; propagated by division of the plant. (89)

Hippeastrum aulicum, *Herbert* (crowned Hippeastrum) —Amaryllidaceæ § Amarylleæ.—A large bulbous plant, from the top of which grow a few strap-shaped leaves, two or more feet in length by nearly two inches broad, and producing a flower-stalk two feet high, bearing about two flowers; the flowers are slightly tubular at the base, divided into six segments of a campanulate shape, the three innermost of which are the largest, crimson, with a green star at the mouth of the tube. A native of Brazil. Introduced in 1816. Flowers from January to July. Also known as *Amaryllis aulica* (Ker). *Culture.*—Requires a stove; rich strong alluvial loam; good drainage; propagated by offsets or seeds. (90)

Lotus albidus, *Loddiges* (whitish flowered Lotus).—Fabaceæ § Papilionaceæ-Trifolieæ.—A sub-shrubby plant, growing about two feet high, with a loose branching habit, palmately trifoliate leaves, with oblong leaflets, and two stipules resembling the leaflets: the flowers grow in umbels from the axils on long stalks, whitish, with a few dashes of reddish purple; they are fragrant. A native of Australia. Introduced in 1822. Flowers in June to August. *Culture.*—Requires a greenhouse, and to be grown in sandy well-drained soil; propagated by cuttings or by seeds. (91)

Cyrtanthus spiralis, *Ker* (spiral-leaved Cyrtanthus).—Amaryllidaceæ § Amarylleæ.—A bulbous plant, with spiral glaucous leaves, about three-eighths of an inch wide, dying in winter; the flower-stem bears at its summit about seven pendulous flowers, which are tubular, slightly swelled near the middle, and divided at the mouth into six segments; they are of an orange-red colour, shading off into yellow below. A native of the Cape of Good Hope. Introduced in 1790. Flowering from May to August. *Culture.*—Requires an airy dry stove; free loam; no water after the leaves die; generally imported, as it is difficult to keep any time. (92)

Acanthophippium bicolor, *Lindley* (two coloured Acanthophippium).—Orchidaceæ § Vandeæ-Cryptochilidæ.—A herbaceous perennial plant, with oblong-ovate channelled pseudo-bulbs, oblong lance-shaped plaited leaves, a foot long, and short flower-scapes, a few inches high, springing from the root, and each bearing four or five large somewhat pouch-shaped flowers, which grow closely together, and are yellowish green, the segments tipped with rosy purple; the cluster of flowers has been compared to gaudy plumaged young birds in their nest, the unexpanded blooms resembling those with the beak closed, the others look like the nestlings gaping for food. A native of Ceylon. Introduced in 1833. Flowers in June and July. *Culture.*—Requires a stove, and to be potted in rough peat, sand, and potsherds; propagated by division of the plant. (93)

Dicksonia antarctica, *Labillardière* (antarctic Dicksonia).—Polypodiaceæ § Polypodeæ.—A noble and graceful arborescent fern, in its native country growing with a trunk thirty feet high and upwards; from the top of this springs a tuft or crown of very elegant fronds; these fronds are very large, several feet long and proportionately wide, and consist of very numerous small segments or divisions, so that it is termed supra-decompound, that is, very much divided. The tree ferns are very slow in acquiring stems, and no very large plants exist in this country. A native of Van Diemen's Land. Introduced in 1824 to the royal garden at Kew. Also called *Balantium antarcticum* (Presl), and *Cibotium Billardieri* (Kaulfuss). *Culture.*—Requires a greenhouse; rough turfy loam and peat; must be very carefully watered; propagated by seeds or spores, but young plants are *many* years acquiring the tree-like habit; and those which exist of any size have been imported. (94)

Phycella ignea, *var. corusca* (glittering Phycella).—Amaryllidaceæ § Narcisseæ.—A bulbous plant, with narrow strap-shaped leaves, tipped with red, and a flower-stem bearing a bunch of flowers at the top; the flowers are tubular, divided into six segments, about two and a half inches long, yellow at the base, and scarlet at the apex; the bulbs are black coated. A native of North Chili, in sandy soil near Concon. Introduced in 1825. Flowers from May to September. Known also as *Amaryllis ignea* (Lindley). *Culture.*—Nearly hardy in a sheltered place; sandy loam; total rest after flowering; propagated by offsets or seeds. (95)

HABRANTHUS INTERMEDIUS, *Herbert* (intermediate Habranth). — Amaryllidaceæ § Amarylleæ.—A bulbous plant, with bright green blunt leaves, a quarter of an inch wide, and a flower-stem about six inches high, bearing a bunch of several flowers at the top; the flowers are divided into six spreading segments, about two inches long, of a red colour, greenish yellow at the base. A native of Brazil. Introduced in 1827. Flowers from January to March. Known also as *Amaryllis intermedia* (Lindley). *Culture.*—Requires a stove or warm greenhouse; rich loam; perfect rest in winter; propagated by offsets or seeds. (96)

HIPPEASTRUM SOLANDRIFLORUM, *var. striatum* (striped Solandra-flowered Hippeastrum). —Amaryllidaceæ § Amarylleæ.—A bulbous plant, with long strap-shaped leaves, about an inch and a half wide, and a stout stem two or three feet high, with flowers from nine to ten inches long; the flowers are tubular for nearly half their length, then divided into six segments, which are spreading at the top, and of a yellowish-white colour, faintly striped outside with red. A native of South America. Introduced in 1820. Flowers from April to June. Known also as *Amaryllis Solandriflora* (Lindley). *Culture.*—Requires a stove; rich loam; good drainage; careful watering; propagated by offsets and seeds. (97)

ALSTRÖMERIA PALLIDA, *Graham* (pale-flowered Alströmeria). — Amaryllidaceæ § Alströmerieæ.—A tuberous-rooted herbaceous plant, with upright annual stems, one or two feet high, scattered narrow sessile leaves, two inches long, and terminal heads of flowers, which consist of six segments, the three outer broad, rounded, pale rose colour; inner ones yellow marked with red and orange. A native of Chili. Introduced in 1828. Flowers from June to September. *Culture.*—Requires a greenhouse or cool pit; rich loam; dry in winter; propagated by parting the roots. (98)

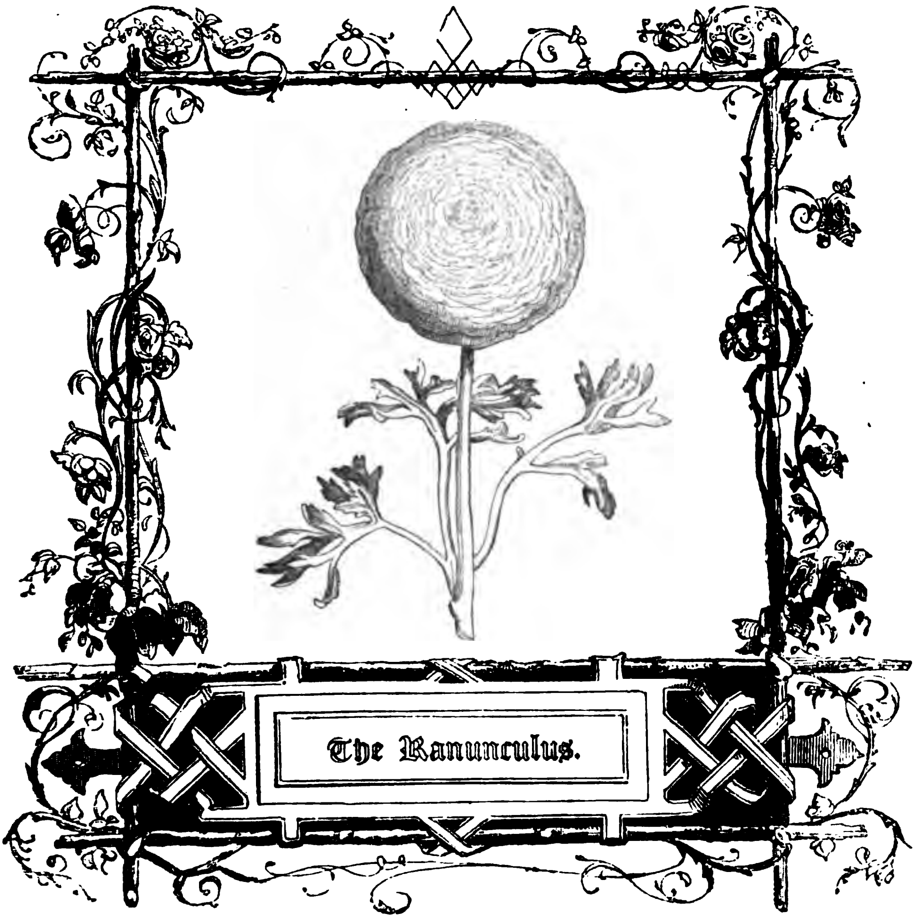
IPOMŒA PLATENSIS, *Herbert* (Platan Ipomœa).—Convolvulaceæ § Convolvuleæ. — A climbing plant of moderately strong growth, producing large tuberous roots, warty stems, and pedate, seven-lobed leaves, the lobes of which are narrow and linear; the flowers are borne from the axils of the leaves, and grow several together; they are large, convolvulus-shaped, of a delicate pinkish lilac, with a dark throat. A native of the banks of the River Plate, where several varieties exist. Introduced in 1817. Flowers from July to September. *Culture.*—Requires a cool stove or greenhouse; free light loamy soil; propagated by cuttings placed in a hotbed. (99)

LATHYRUS TOMENTOSUS, *Lamarck* (cottony Lathyrus).—Fabaceæ § Papilionaceæ-Vicieæ. —A sub-shrubby plant of a half scandent character, with branches more or less covered with soft silky pubescence; the leaves consist of one pair of linear lanceolate leaflets, with a short tendril between them, and a pair of stipules at the base resembling the leaflets; the flower-stalks grow from the axils of the leaves, and bear three or four rather large violet-coloured butterfly-shaped flowers near the top; the seed pod or legume is densely covered with down. A native of Buenos Ayres. Introduced in 1839. Flowers in July and August. Called also *Galega binata* (Sprengel). *Culture.*—Requires protection in winter; grows freely against a south wall in summer; light soil; propagated by seeds or cuttings. (100)

HABRANTHUS PHYCELLOIDES, *Herbert* (Phycella-like Habranth).—Amaryllidaceæ § Amarylleæ.—A bulbous plant, having a large black round bulb, narrow strap-shaped blunt glaucous leaves, and a stem more than a foot high, bearing a bunch of about six flowers; the flowers have a short tube, are about three inches long, divided into six segments, yellow at the base, scarlet above. A native of Chili. Introduced in 1825. Flowers from August to October. *Culture.*—Nearly hardy, but does best in pits or frames; rich sandy loam; strong heat when at rest; propagated by offsets or seeds. (101)

PHYCELLA CYRTANTHOIDES, *Lindley* (Cyrtanthus-like Phycella). — Amaryllidaceæ § Narcisseæ.—A bulbous plant, with green strap-shaped leaves, and a flower-stem about a foot high, bearing an umbel of flowers at the top; the flowers have a short tube, divided into six long segments above, greenish yellow at the base, red upwards. A native of sandy hills near the sea at Concon in North Chili. Introduced in 1821. Flowers in June and July. *Culture.*—Nearly hardy in sheltered situations; sandy loam; total rest by keeping dry after flowering; propagated by offsets or seeds. (102)

CYRTANTHUS OBLIQUUS, *Aiton* (oblique-leaved Cyrtanthus).—Amaryllidaceæ § Amarylleæ.—A large bulbous plant, with narrow strap-shaped leaves growing in two ranks, covered with a mealy whiteness; the flowers are borne on a thick hollow stem, nearly two feet high, and are eight or more in number, three inches long, pendulous, of six segments, rather spreading at the mouth, orange and yellow with green tips. A native of the Cape of Good Hope. Introduced in 1774. Flowers from May to August. *Culture.*—Requires a warm greenhouse; sandy loam; cautious watering; propagated with difficulty by offsets or seeds; generally renewed by imported plants. (103)


The Ranunculus.

GLENNY ON THE RANUNCULUS,

ITS CULTURE AND PROPERTIES.

The Ranunculus was once one of the most favourite of Florist's flowers, and it has been produced nearer perfection than any other subject that we know of; still there is much to do to bring it to our standard. All the persons who have written about their properties omit the most essential of those not yet attained. They say, the criterion of a fine double ranunculus is, that the stem should be strong, straight, and from eight to twelve inches long; the two former points are essential in all flowers, but whether the stem be one-eighth of an inch longer than will keep it above the foliage is perfectly immaterial, because in all dwarf plants the more uniform their height, and the nearer the ground, so that the bloom is fairly above the foliage, the better: there is nothing gained by length; it by no means adds to their beauty. Again, they talk of "a large well-formed blossom, at least two inches in diameter," as if size were the grand object; whereas there should be a limit to every thing, and that limit should depend on the natural habit of a plant, and also on the natural texture of a bloom. Set the perfection of size, and it will mean something; we have no objection to two inches as the perfection, but to set two inches as the minimum, is an error calculated to give rise to coarseness, and coarseness in a ranunculus would be fatal. Then it is said that "the outer petals should be largest, and gradually diminish to the centre," as if it were possible to obtain a ranunculus that were otherwise; the worst flower that was ever produced had the largest petals outside and gradually diminished towards the centre; it is, in fact, saying nothing. It is further stated that the blossom should be of a hemispherical form. "Its component petals should be imbricated in such manner as neither to be too close and compact, nor too widely separated, but have rather more of a perpendicular than a horizontal direction." This is perfectly ridiculous; the outer petals should be quite horizontal, and rather reflexed than otherwise, and the inner ones should be more than perpendicular, if a cupped petal can be so called, for the inner ones ought to meet and rather cover each other, turning completely inwards so as to conceal the seed-vessel entirely; and it follows as a thing of course, that no two rows of petals can be alike as regards their relative position. In short, this is an attempt to define, which renders the conditions contradictory to the result; a hemispherical form can no more be produced by petals more of a perpendicular than horizontal direction, than sharp corners could be made with circular bricks. "The petals," it is said, "should be broad, with well-rounded edges." The less the edges of a petal are rounded the better; round edged petals are by no means desirable; they should be almost straight on the edges, like a half-open fan, forming two blunt corners to each individual petal, and the outer edges forming the outline of the flower: well rounded petals would make a rosette sort of edge to the flower instead of a perfect circle. As to their colours being "dark, clear, rich or brilliant," the colour is such a pure matter of taste that we do not see what it has to do with the criterion of a fine double ranunculus.

THE PROPERTIES OF THE RANUNCULUS.

The flower should be of the form of two-thirds of a ball, two inches in diameter, the under part of it square or horizontal.

The outline of the bloom should therefore form a perfect circle.

The petals should be thick, smooth on the edges and gently cupped; they should lie close, so that very little but the edges should be seen, and that little only the inside surface.

The flower should be symmetrical to the centre, which should be close, so as to perfectly conceal the seed-vessel, even with the surface, and perfect so as to exhibit a complete finish to the surrounding petals.

The colour should be very dense, whatever be its hue; if an edged flower, the edging should be well defined, and the marking even and uniform in every petal; in no case should the ground colour break through the edging, but spotted flowers with one spot on each petal are allowable.

The stem should be strong, perpendicular, and long enough to raise the flower clear six inches above the foliage, and no more, but this has reference to the plant, rather than to the flower.

Striped flowers are not perfect, nor are flowers speckled on the edges; the colour of edged flowers, like those of edged picotees or tulips, ought not to exhibit a single break.

The foregoing remarks were necessary before we began to notice the culture and management of this favourite flower, for as we shall begin by selecting, or rather recommending the selection, of those flowers only which exhibit these properties, or some one of them in a marked degree, it could only be done after giving the points to be most regarded. From what we have said, the reader will observe that all thin petalled flowers, all those with serrated or notched edges, all those which are rough in the outline, flat or sunk in the centre, or confused in the laying of the petals, are faulty; and in choosing from the stock while the flowers are in bloom, they are to be avoided. The real objection to thin petals is, that they do not preserve their form so well, nor remain in perfection so long, nor give the colour so dense. Shaded flowers are allowable, though stripes are not; but like the exhibitors of picotees, the growers will retain the speckled edges though they are decidedly inferior to those which possess the colour unbroken at the extreme edge. The true spotted varieties have only one spot on each petal, but the spot must be well defined. The rank in which these different classes of flowers stand, is—first, the edged; second, the spotted; third, the shaded; fourth, the selfs. We do not place the broken edged or speckled in any rank at all. The selection of the varieties may, under these instructions, be decided upon with but little doubt, even by an inexperienced person.

SOIL.

The soil proper for the ranunculus is a rich hazel loam; the best mode of preparing this is to obtain turfs from some pasture, cut about three inches thick, and lay them to rot. This of course takes time, but unless the soil is already prepared this mode of providing will be the best. Supposing this cannot be got, the next best mode is to get the top spit of a meadow, where the soil is loam, and lay that by; but as there will not be one-fourth so much vegetable mould among it in proportion to the quantity of loam, the deficiency would have to be made good by leaf-mould—that is, the mould of decayed tree-leaves—to be added, or by decomposed cow-dung.

With regard to any mixture, the nearer it can be brought to the same description of soil as the rotted turfs would make, the better it would be. If the loam be pure, as it is when dug from beneath the sod, and what may be called clean, it will require three measures of loam, two of leaf-mould, and one of thoroughly decayed cow-dung; this should lay together in a heap and be frequently turned and picked over to clear it from grubs and wire-worms. Many have used new cow-dung, but this too frequently attracts a fly which fills it with maggots, which are very destructive. The loam which should be used should be of that description which does not adhere too closely; loam which, when a handful in a damp state is squeezed closely, should retain its shape when laid down gently, but which will break easily when pressed in one spot. The ground in which the ranunculus is grown must be well drained, and indeed, for every thing this is almost the first point to attend to. The bed should be dug out from a foot to fifteen inches deep, three feet six inches wide, and the bottom loosened; upon this the ordinary soil mixed with an equal portion of rotten cow-dung, or dung from an old melon-pit, may be returned to the bed to the thickness of six inches, leaving nine to be filled with the fresh loam, or rather mixture proposed; and this may be done in the first week of February. The soil should be put in two or three inches above the surface of the paths, as it will subside a little.

PLANTING.

About the middle of February is the planting time for the show varieties, which are much more delicate than the ordinary kinds; and being also more valuable, the shows are held in June, that they may suit spring planting, and so prevent loss by hard frosts, which would occasionally take place in very hard winters. In planting stretch a tight line down the centre of the bed, and draw a drill two inches deep; then remove the line six inches, and draw another, and so on till three drills are drawn on each side the centre one; this will occupy three feet, and allowing three inches clear of the outside rows, makes up the three feet six width for the beds. In these drills place the tubers six inches apart, pressing the points into the soil gently, so as to leave just the crowns above the bottom of the drill. Into this drill, the earth, being first properly pulverised, is to be drawn back again, so as to cover the crown two inches, and it should be rather pressed down upon them, not too hard, but close, so as not to let the air readily in upon the tubers, which, if the lumps be not broken, and well crumbled, would be the case. The beds may then be well levelled, or rather smoothed and left until they come up. On their breaking through the ground, the earth will be loosened a good deal; and as soon as they are fairly through, the soil about them must be crumbled again, and pressed close to the tubers. The beds should also at that time be stirred over the surface, and laid smooth and regular again. If there be dry weather the bed must be watered all over, not merely the rows, but the entire bed, and completely saturated so that it will not want watering again very soon; for when the rows only are watered the dry parts of the bed absorb the moisture away from the roots, and they are soon distressed again. When the plants are once up the bed never should be dry one inch below the surface, consequently the greatest attention is required to the watering department.

BLOOMING.

When the blossoms rise and begin to expand, they must be shaded from the sun as jealously as the tulip, but the shading should be such as will not exclude the light nor the air. Hoops and mats draw them too much; tulip irons, which are some feet high, with transparent cloth to cover them, are far better; here they will bloom in perfection, and not be drawn up; but in cloudy days, when the sun is not out, they are far better without any covering. They must also be protected from wet, which would spoil these flowers altogether. When the bloom is over, or at least so far advanced as to be no longer wanted, the covering must be taken off altogether, and the plants must have all the rain that may come, for two or three weeks at least, however wet it may be; but if it be a dripping season after that, the plants which have pretty well matured their tubers must be protected from any further rain, as there would be danger of the tubers growing again. In ordinary seasons, however, there is not too much wet, and the foliage will turn yellow and decay.

STORING.

It is not necessary to wait until they have actually died down before the roots are taken up; it is better to lift them when they have turned yellow, and an inch of stem should be left on them. They should be put by in thin bags or boxes, with their names to them; but before they are bagged they should be dried in the shade. It is generally sufficient to leave the mouths of the bags open, and put them side by side upright in a shallow drawer or box; or it is still better to have drawers or boxes made with partitions like those for tulips, and let them dry in these before they are put away. When they have thoroughly dried, the drawers may be put into their places, and all that is then required is to occasionally examine them, to see there is no mildew or mouldiness about them, for that would soon destroy their vitality, and they would be decayed long before planting time came again.

AUTUMN PLANTING.

There are many persons, who, besides planting select beds in February for the June show, plant also in autumn for earlier bloom. The sorts used for this are surplus stock of good ones, or altogether common ones. The beds are treated the same way; the planting being conducted in all respects similar to those planted in February; but the month chosen is October, and they frequently come up before there is any very decided winter. In this case, hoops should be placed across the beds, as close down as they well can be put, and mats, or transparent waterproof cloth, must be thrown over them whenever there is any chance of frost; or, if this cannot be done, pea haulm or other loose litter should be placed over them to protect them, for the frost, if severe, would not fail to damage them considerably. Then, if the winter be mild, they will throw up their flowers early in the spring, and it will frequently be a stronger bloom than those planted in February; but it is quite necessary to protect them against frost, or many would be destroyed, for in their growing state the tubers are soft and very susceptible of damage by freezing. There are the scarlet Turban Ranunculuses, which are more hardy than the rest, and these planted in the autumn will flower before the tulips, or at the same time; and we have, in olden times, seen a row of these round a tulip stage, in a narrow border next the cloth, which more forcibly reminds us of the fact. The after-management of autumn-planted ranunculuses is similar to the others. The decay of the foliage is a guide as to the taking up, and the drying, storing, occasional examining, and so forth, are to be attended to in a similar manner.

When the tubers have dried well, we have said they take no harm till planting time, but they must be cleaned from their mould, and be properly divided before planting again. It will be seen that the roots or tubers as taken up have several eyes or crowns; each of these is a separate plant, and requires to be removed or parted from the rest; the forks of the tubers grow in among one another, and they require careful handling to part them, or the lobes or fingers of the tuber will break. It is easy to perceive which are strong enough to bloom, and which are not. The former are for the blooming beds, and the smaller ones should be planted in separate beds, with labels to mark their several names, or numbers to correspond with names, so as to keep each sort separate. These smaller offsets should be planted in similar rows, but the tubers not more than three inches apart in the row, and the labels three inches from the tubers that end one sort, and begin another, so as not to mix or cause any mistake in the taking up.

ARRANGEMENT.

In planting the other beds of named flowers it is only necessary to do as with tulips; keep a book with an account of the rows, which having seven in each, we have only to enter the 1st row number one, two, three, four, five, six, seven; the names to each number thus:—

FIRST ROW.	SECOND ROW.
1 Alceste	1 Splendour
2 Duke of Sussex	2 Charybdis
3 Commodore Napier	3 Prince Eugene
4 Prince of Wales	4 Numa
5 Princess Royal	5 Major Laing
6 Talisman	6 Dr. Darwin
7 Zobeide	7 Lady Sale

In this way the entire bed of tubers may be recorded, and their places tell their names, precisely in the way that a tulip book is kept, the rows being always counted across; the number of tubers in the long rows only show how many rows there are in the bed. The drawers or boxes are to be made with seven partitions across, and these represent the rows, which should be numbered one, two, three, and so on. Perhaps the drawers made with ten rows are as handy as any; the first drawer would be numbered one to ten, the second, eleven to twenty, the third from twenty-one to thirty, and so on; this greatly facilitates the taking up and planting, and is infinitely better than bags. Independently of these, in the beds, there will be a stock of many sorts beyond the number required; these should be in bags, and every time the best beds are taken up, a good many will be found to add to the surplus stock, because one good strong tuber in each place is enough.

About August the top soil should be turned out of the beds intended for autumn planting, and laid in a ridge on each side, to be turned over several times before it is returned again to the bed, for the October operations; while this is outside in ridges it may be mixed with one-fourth of its bulk of leaf-mould or cow-dung decayed into mould. In like manner the beds intended for the February planting may be turned out in November or December, but only to the depth of the top nine inches; the other may be all loosened, and when this is returned to the bed in the first week in February, let there be a complete level drawn, about six inches below the surface, and on that put a layer of rotted cow-dung of an inch in thickness. The soil may then be filled in and be got ready for planting, as before directed; but it is to be understood that the cow-dung at the depth of six inches is to supply any deficiency of nourishment in the soil which may be occasioned by the blooming of the previous year; and it has been found better than mixing the soil again the second season, because by the time the plants begin to feel the want of nourishment the roots will reach the dung. It has been said that the tubers ought not to come in contact with fresh dung, but the truth is, fresh dung ought never to be used. It should be fairly rotted into mould before it is used at all. A very recent writer has actually recommended the loam of which the bed is formed to be saturated with liquid manure, made of fresh, or rather new cow-dung. We will not say that it is impossible for the plant to succeed in such stuff, but we do know that new cow-dung attracts a particular fly and breeds maggots enormously fast; and that in most localities such a bed would be fatal. Those whose beds have been infested with such, will probably recollect to have used cow-dung that was not perfectly decomposed, and may pretty safely attribute the visitation of the pest to that cause. At all events, knowing as all ought to know, that there is a great risk of fresh cow-dung breeding maggots, the success of an adventurous experimentalist ought not by any means to prevent the caution which every prudent cultivator should observe in every step he takes. If the writers on the cultivation of this beautiful flower were right, how are we to account for the many failures, and for numerous persons discontinuing its culture altogether?

The fair inference is that, however well some of them may have succeeded under particular circumstances, their plans must have been bad on the whole; for certain it is that not one grows them now for twenty that cultivated them years ago, and the number has rapidly diminished, even up to within the last very few seasons. Mr. Lightbody, of Falkirk, and Messrs. Tyso and Sons, of Wallingford, appear to be the best of the growers of modern days; and in the metropolis of London Mr. Alexander, of Lea-bridge Road, and Mr. Groom, of Clapham, seem almost the only successful growers for sale; Mr. Groom, the successor and representative of the oldest really floricultural nursery in the metropolis—Maddock, Curtis, Millikin, and Groom having successively worn the floral belt; and Mr. Alexander, being a sort of London double to Mr. Lightbody, and growing them upon his plan. By way of parting advice, however, to all who desire to be foremost in the field, we would say, get, at any cost, the turfs cut three inches thick from a rich loamy meadow, and let them rot together; turn them frequently after the first year to clear them of bots and grubs, wire worm, maggot, and other living pests; and in this stuff without any addition—except clean sand if the loam prove too adhesive—grow your ranunculuses; for no made up soil can beat it, and very few can make up a compost to equal it. The vegetable mould which must form a most important portion of the whole, is important to the growth of every thing; the half decayed fibres keep it light and pervious, so that it rarely wants even sand; and there are few subjects in the whole range of florists' flowers and plants that will not thrive in it, but especially those grown in the open ground, as tulips, polyanthuses, anemones, ranunculuses, hyacinths, pinks, &c.; nor is there any thing so well adapted to form the staple loam for potted plants, mixed with peat or dung, or other matters, according to the family of plants which are to be cultivated therein.

RAISING SEEDLINGS.

The only way in which to produce new varieties is from seed, and generally speaking the best beds would afford but little chance; indeed the blooms should be cut off the instant they are past their prime, for the sake of encouraging the growth of the tubers; so that to save seed, a selection should be made of the best flowers that are inclined to come semi-double, those, for instance, with thick large petals which have very smooth edges and desirable colours. Some of these should be planted in a place by themselves in the autumn, and some in the spring, for the sake of the double chance, for it will sometimes be found that the autumn ones will seed when the spring planted will not. In selecting these varieties, it is not necessary to have show flowers; if you are in the habit of raising flowers, or know anybody that is, select those which do not close up in the eye, if there be any which possess other good properties, for if there be three or four rows of petals you will find double flowers among the produce.

When those which are being grown for seed come into flower, they are not to be shaded, nor is the rain to be kept off, but as the best flowers rise, take off all the others from the plant, to throw the entire strength into the one bloom on each tuber, or at most let two remain. Take care that they are all through their growth copiously supplied with water after the sun goes down; let the entire space be saturated instead of, as is commonly the case, confining the moisture to the roots; because when the bed is well soaked, the surrounding moisture keeps supplying the deficiency which the roots absorb, whereas, if the roots alone are soaked, the dry portions of the bed absorb faster than the roots, and take from them what they stand so much in need of. When the pods, or rather the heads of seed, begin to ripen, they must be watched and frequently examined, that all those sufficiently forward may be gathered. The seeds may be placed with the stems in a box, and be thoroughly dried, when they may be scraped off with the back of a knife, and mixed with very dry sand, in which they must be well rubbed together, so as to separate them properly, because they cannot well be sown too thinly. Some persons lay the heads of seed by until the sowing time, and then scrape off and mix them with sand, for the seeds are only very thin scales, and cling together in lumps, unless separated by the means already mentioned. In February, get large sized pots, in preference to shallow boxes, or pans, which are recommended by most writers, and fill them within one inch with the soil recommended for growing the tubers in, gently knocking the bottom of the pot against the table to settle the earth down; upon this place the same kind of soil, sifted through a fine sieve that will let nothing larger than a radish seed through it, and strike this off level with the edge of the pot. Upon this sow the seeds thinly, that is, so that not more than four or five seeds would be within a square inch, and upon this seed sift as much more soil as will just cover it and no more, so as not perceptibly to raise the soil above the edge. The reason for recommending pots instead of pans or shallow boxes, is that the greater body of earth preserves the moisture more regularly; this must never be allowed to get dry, but when watered the only safe way to do it is to get a brush, about the texture of a clothes-brush, which must be dipped in water, and then by turning the hairs upwards, and drawing your hand along the tops towards you, they throw off the wet in such fine particles as not to disturb the lighter seeds. There are, however, patent syringes, which throw out the water as fine as any dew; one of these will throw water up so as to fall almost as fine as a mist, and the operation is not so tedious by a good deal as by means of the brush; another advantage is that the watering may be continued until the pot of soil is fairly saturated, without disturbing a particle of earth; and this is one use of the finest roses that are made to screw on these patent syringes, or, as they are sometimes called, garden pumps. If, however, the fine rose be applied with direct force, it is strong enough to remove vermin from the stems and leaves of plants; therefore, if the water were thrown even with this finest rose direct on the seed pots, the soil would be washed out of the pots. The only proper way is to elevate the rose so that the particles fall on the seed. These pots may be set in a green-house or cold frame, and be protected from heavy falls of rain, and the direct rays of the sun, whenever they are too hot, but morning and evening sun will not hurt them. If large quantities are to be sown, a bed may be prepared, forming the same as when old tubers are to be planted, but it must be the dimensions that will suit a common garden frame, not more than six inches deep in front and twelve at back; the frame may be placed on this soil, which should be well patted down, level and even rolled; upon this place the frame, which should be filled to the height of three inches with the sifted compost, and the back and front may be banked up outside to the same height; the inside soil being nicely levelled, the seed may be thinly sown, and occasionally watered with the fine rose: if a proper garden syringe is not at hand, get the finest rose that can be procured made to a watering pot of one gallon only, and with careful watering the seed will not be much disturbed: whether the seed be in pots or in whole frames as now mentioned, the proceeding must be the same. Protecting from the weather and occasional shading are necessary, and must be given; and every weed removed as soon as it is large enough to take hold of, however tedious the job may seem, for a few days' growth of weeds would destroy a large portion of the young plants. Plenty of air must be given as soon as the plants appear, and watering must not be neglected. As soon as the plants get four leaves the glasses may be removed all day, except in bad weather, and water must be given only after sun-set; it will be necessary to continue the glasses at night if there be the slightest chance of frost. In this way continue managing them until they have attained their full growth, carefully removing every weed as soon as it can be laid hold of.

When the foliage begins to turn yellow and decay, they should be taken up by sifting the soil through the same fine sieve, beginning at one end of the frame, which should be lifted off, and taking the fine portion of the compost to the bottom, picking out the small tubers, which will be easily found among the stuff that hangs behind in the sieve, for it will not all go through again as it did at first. When all that can be found are picked out in the dry sifting, wash what is left in the sieve each time by sifting again in a vessel of water, for the earth will cling to the tubers so as to make them appear like lumps of soil.* They should be spread out to dry in the shade, and be then preserved in dry sand until the January following, when in prepared beds, exactly similar to those for the blooming tubers, they are to be planted for blooming; on this occasion they need only be placed three inches apart in the rows, although they will grow rank and strong, even more so than matured tubers; but so large a portion will be single and semi-double and useless, so that by taking up the worthless, plenty of room will be given to those which happen to be worth saving. It happens too, generally, that the most single and useless bloom the most early, so that all things favour the plan of planting at short distances. It must, however, be kept in mind that as it is necessary the better ones should have attention and room, the bed must be examined daily, and as fast as any that are of no value develop themselves, they should be removed. A short spud to thrust down to the tuber, and force it up, is the readiest mode of removing the bad ones, although they would come up easily enough by pulling out like a weed; the only drawback to this quicker mode being, the chances of leaving offsets in the ground, and so being perplexed with mixtures afterwards when you come to plant others in the ground. Those which appear worth saving should be numbered accurately, one, two, three, and so on, with the date of the year, on neat labels first painted with white paint, and the numbers made with a black-lead pencil while the paint is wet; these labels should be kept ready for the occasion. These numbers should be entered into a book, with an accurate description of the flower to each number, and in this description should be carefully noted every particular, whether the petals be thin or thick, whether the edges be smooth or notched, whether the flower be double, single, or semi-double; large, small, or medium size; what is the colour, or whether it be edged or spotted or striped; and what particular property is so striking as to induce the saving of it; because we have a right to suppose that a flower may be so striking in some particular as to be worth saving for the purpose of seeding from, and yet be very deficient in some other particulars, so as to be good for nothing as a show variety. Each variety must be kept separately, in a distinct bag or box with the number attached to it, so as to be able to refer for its characters to the book without difficulty; any, however, that are good enough for show flowers may be at once transferred to their proper places among the best flowers, and may receive their names if they are to be named at all. It is in fact better to name them at once if they are to be grown in collections, though many who are too sanguine in selecting from seedling beds had need try them again before naming. Of those to select, there are three classes:—The first should be only such as are really fit for naming and adding to collections, on account of their being new and good, better than we already possess of the same colour. The second should be such as are not good enough to name, but which may come better, and therefore are worth another trial; such as are nearly perfect in the eye or centre, but not quite, and will be good enough if they in the least improve, but condemned if they remain as they are or get worse in another year's growth. The third should be such as have some excellent property, but are deficient in others, and are therefore saved to seed from. These must be kept separately, and the next year the class which has to be tried again may be added to those intended to be seeded, because if they were good enough to be tried again as show flowers, they must be good enough to give seed from which much may be expected; the very fact of their being not quite double enough to name, renders them fit for growing for seed, for they seed more freely than the very double varieties; but unless there is something very striking in the petal, or the form of the flower, or the colour, that is a fair advance upon what we have, there is nothing to justify their being saved even for the chance of being better, or for saving seed from.

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* The old writers recommend that before the soil is sifted, to get out the small tubers, the decayed leaves should be picked off; nothing can be worse advice, for the stems and decaying leaves are of the greatest use in finding the tubers.

We proceed now to the mere routine business for the different months, which will serve as a kind of remembrancer, even to those who are somewhat experienced:—

January.—The whole of the tubers should be examined and sorted, or arranged for planting, taking care that blooming roots only be depended on for the best bed, and if there be any offsets attached, they should be removed. If grown for exhibition or stock only, the best way is to keep all the sorts together, but if the bed be intended for ornament and not for exhibition, some attention should be paid to the arrangement, and regard should be had to colour and height, the tallest being in the centre, the shortest at each edge, and the middling ones in the second and third rows from the edge: again, the flowers should be the same on one side of the bed as the other; that is, the variety at the edge on one side of the bed should be similar to that on the other, so also the variety that is second on one side should be similar to that in the second row on the other; for although we have already given an example of two rows, with their names arranged after a different fashion, it was simply to explain the mode of keeping the book. The arrangement should be (if the bed is to be perfect) as under—

D C B A B C D
H G F E F G H

This will illustrate what we mean by this uniform arrangement; a bed made in this way will be found so superior as an object to all other modes of planting, that no one who desires to see a fine collection will ever do it in any other way after they have once seen it. Besides the uniformity there should be an eye to contrast, for the less they are like those next to them the better. These things observed, and the highest kept in the middle or inner rows, the superior appearance will amply repay for the trouble. The soil should be thrown out of the beds, if not done before, to the depth of a foot, and laid on each side in ridges, to be turned and mixed for planting when returned to the bed. The autumn-planted ones must have litter over them, and the earth stirred, and crumbled fine next the tubers. Sow seed this month or next, in the manner already directed.

February.—Continue to turn and mix the soil as directed in the general culture, and at the end of the first week return it to the bed in the manner directed. About the middle of the month plant the tubers: if for a show-bed attend to the arrangement mentioned last month; if for stock or to cut from, plant the sorts together, and have labels where the one sort leaves off and the other begins. There are some who prefer having a row of each sort, and when they have completed them, beginning them over again; however, there is less trouble and more certainty in keeping the entire stock of a sort together, and much less chance of a mistake. The directions for planting are already very complete. See that the autumn planted ones are protected.

March.—If the swelling of the tubers cracks and disturbs the soil, let it be crumbled by the hand and pressed down a little, that it may lay solid to the tubers; and if the weather be very dry towards the end of the month, let the bed be watered, but not if on turning it up it seems moist an inch or an inch and a half below the surface. The autumn planted ones will be well up and growing; let the earth be stirred all over the surface, and well crumbled and pressed next the tubers, for the growing will always disturb it, after the soil has been closed by rain and dry weather ensues. Nothing is more injurious to the tubers than to have the earth hollow about them; on this account that point must be always strictly attended to. The weeds must be well kept under at all times, and by no means allowed to grow.

April.—The continuance of the treatment already recommended is all that need be attended to. The weeds will grow rapidly, and must be pulled out as soon as they are large enough to lay hold of. The earth must be occasionally stirred, for the watering closes the surface. Look now to the seedlings which are up and growing, and take especial care that weeds are removed before they can at all establish themselves among the roots, which being small would be pulled up in removing the weeds; let them be refreshed with water in dry weather, and shaded from the heat of the sun; warm gentle rains will do them good, much more so than artificial watering. They will all, both seedlings and named flowers, require protection from frost, and watering in dry parching weather. The autumn planted ones will require to be shaded from the heat of the sun, as soon as their colours show; but that will not be until next month in ordinary seasons, though in some seasons they will show their colours this month.

May.—The beds will now require to be cleared of their litter and of weeds, the surface stirred, the lumps bruised, and the top raked even and smooth. They may have all the rain until their flowers begin to open, after which they must have neither sun nor rain, for either would spoil them, and both together would hasten their destruction. The seedlings must be constantly cleared of weeds in the youngest state, and have regular waterings in dry weather; the established roots, too, while throwing up their bloom stems, must be kept well moistened by watering the whole bed after sunset; and as weeds grow rapidly they must be industriously kept under. Where the blooms are intended for exhibition, not more than two ought to be left to perfect themselves on each plant, and if they are not for showing, the tubers will be all the better for restricting the number.

June.—In this month the spring-planted beds will rise early for bloom, if they had not already advanced in the last month, and they should be thinned of their flower-stems, if not already done. The weeds should be removed as soon as they are large enough. The earth should be pressed to the tubers, the surface occasionally stirred, the watering continued regularly every evening, but not so as to touch the flowers. It is of far more consequence to water well between the rows than on the foliage, but it should be done so copiously as to saturate the whole bed and wash all the tubers. The wet and sun must, as in the earlier beds, be kept off by proper covering; and until the prime of the bloom has gone neither should be allowed to reach the flowers. The seedlings should be watched, weeded, and watered, and may have all the weather except the scorching mid-day sun, which would be too powerful, and dry them up before the tubers had grown large enough to be safe for storing. It is possible that the autumn planted beds may be dying off by the end of the month; they must have all the weather from the time their flowers are past their perfection. If they have by the end of the month begun to turn yellow, and decay down, take advantage of dry weather, and take them up; let them be dried in the shade with their mould and foliage upon them, and when thoroughly hardened clean them and put them by, cutting the stem off half an inch from the tuber.

July.—The seedlings will be this month fit to take up, as directed in the general culture.

The spring planted ones will also be past their bloom at the beginning of the month, and may be allowed to have all the weather, and to be watered if it prove very dry before they have done growing; but if it be a wet season, let them be protected from the rain, lest the tubers should start again into growth. Still keep them clear of weeds, which will in a few days choke them when neglected. When they have died down, that is, the foliage turned yellow, they may be also taken up and dried with the mould upon them, and without cutting off the stems and foliage; and when thoroughly dried, they may be cleaned, and the stems cut down to about half an inch in length, which may be left on; they may then be put in their boxes and bags, and laid by, where they will keep dry and have plenty of air.

AUGUST.—The beds may be prepared for the autumn planting, and the soil thrown out on each side the bed, for the purpose of stirring and mixing it, picking out the wire-worm and grub, if there be such, and preparing it for the next occasion. All the tubers in store should be examined, to see there is no mouldiness or mildew about them; and if there be, they should be brushed so as to remove it, and be placed where they will be free from damp, for the mildew very soon destroys the buds if not removed.

SEPTEMBER.—Examine the tubers again from time to time, and arrange for the autumn planted beds: these are generally confined to the sorts of which plenty may be possessed, because, as we have already explained, they would be tried a good deal by a hard winter, especially the more tender and scarce ones: on this account it is not advisable to plant scarce sorts in autumn, but confine the beds to those which are more hardy, and of which there is a superabundance. Turn over the soil several times, and return it to the beds as directed, previous to the planting of next month.

OCTOBER.—Plant for the autumn beds, according to the directions given in the general culture, and be prepared to cover up against hard frosts with litter of some kind, or with hoops and mats, not that it need be near the bed at first; but if the weather be mild and wet, they will soon swell, and frost at that time would do mischief; therefore, be prepared, so that at short notice the beds may be covered up against it.

NOVEMBER.—Continue to provide against frost for those which are planted, and occasionally examine the tubers in store, especially the one year old seedling tubers, which are very small, and consequently easily damaged by damp, and shrivelled up by too much heat, for they have but little substance; and if they appear to shrivel, it is better to plant them at once, and be careful of protecting them, than to leave them till the spring; for when they once begin to shrivel they soon lose their vegetating powers. However, if not taken up till the foliage has decayed, and when taken up stored where the place is cool and dry, there is no danger of this. It will be necessary now to have the litter or mats, or whatever else is to be used for the protection against frost, close to the beds, so that it may be put on every night, because there is no certainty. Even in these months the weeds will require attention, as many will grow strong in a mild autumn.

DECEMBER.—The beds must now be prepared for the spring planting. Throw out the soil into ridges, if not done before, and while out it should be turned, examined, and cleared of wire-worm, grub, and the like pests, by picking them out. We have already been so explicit as to the soil and compost which they should be grown in, that anything here would be mere repetition. The objects of repeated turning during the winter months, and up to the time of planting in February, are first to sweeten the soil by the admission of air to every part, to clear it of vermin, which are the less likely to escape in proportion to the number of examinations; and lastly, to benefit, by exposing as much of it as possible to the influence of whatever frost there may be. The autumn planted beds must be covered against frost, and this should be done every night, because there is no dependence on the mildness of an evening lasting till the morning, and one severe night might do a good deal of mischief. Look well to the tubers that are in their boxes and bags; indeed, this is a sort of constant duty, for they should never be neglected long together, in case of an attack of damp or mildew, for the progress of these visitants is very rapid. If there is any considerable number of very small offsets, and they are at all drying or shrivelling, it may be desirable to get them into the ground, lest they should dry too much; but if this be done, the bed must be more carefully protected against frost than even the beds already growing, because the tubers are the most tender after they have begun to swell, and while the first fibres are pushing. However, in most cases, the safest of all seasons for the planting is February, for the tender sorts intended for exhibition; and the autumn planting gives an earlier bloom for the ornamental features of the garden; indeed, if it were only for the advantage of two distinct periods of bloom, an autumn bed is desirable; besides, if the autumn bed be properly protected, the increase is generally greater and the roots come finer; yet it would be wrong to risk any valuable ones. With these hints as to the duties which devolve upon the grower each month, after reading the instructions which precede these, there will be little difficulty in growing this most beautiful flower, and we think many of those who have abandoned them will resume their cultivation.

VARIETIES.

The following selection may be taken as comprising some of the best varieties of Ranunculuses we have:—

Rose, Edged, Spotted and Mottled.—Annot Lyle, Zebina, Chimpanzee, Grace Darling, Lady Sale, Mrs. Glenny, Lictor, Nina, Numa, Prince of Wales, Splendour, and Zobeide.

Dark, Edged and Mottled.—Dr. Horner, Duke of Sussex, General Robertson, James Dickson, Larne, Major Laing, Nydia, Otway, Richard Dixon, Sir John Graham, Sir Philip Broke, and Talisman.

Yellow, Edged and Mottled.—Balloon, Charybdis, Colonel Dennie, Commodore Napier, Constantia, Cowley, Dr. Darwin, Prince Albert, Prince Eugene, Princess Royal, Richard Headly, and Waller.

The following are twelve of the best seedling Ranunculuses, produced by Messrs. Tyso and Son:—

Alexis, yellow spotted; Attractor, white edged; Creon, buff edged; Delectus, yellow edged; Dr. Horner, yellow edged; Edgar, yellow edged; Felix, buff spotted; Herbert, yellow crimson edged; Innocent, white spotted; Nicander, white spotted; Vendome, cream purple edged; Victor, dark.

MISCELLANEOUS NOTES.

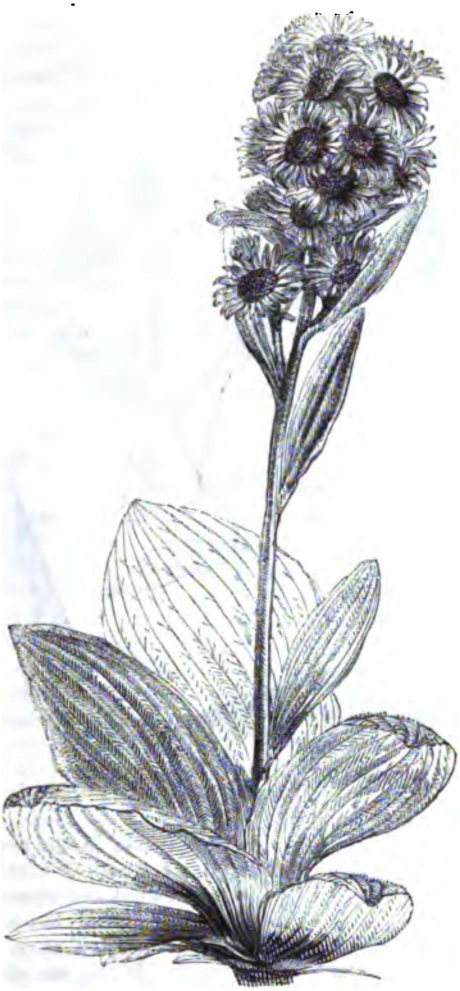
Water and Watering.—Rain water is best for all plants. Where, however, rain water cannot be provided, water from a pond or brook should be used, in preference to well-water; and of this, the softer is the better, generally. If neither rain water, nor soft water, nor the water of rivers or brooks can be secured, and hard well-water is necessarily used, it should be exposed during a whole day in a broad flat vessel to the sun and air; this aëration is of great benefit. The watering of Ranunculuses is of most importance just at the time the flower buds appear, for if at that time the weather be dry and parching, and no water is applied, the flower-stems will often prove abortive. Let the operation be attended to when the sun does not strike fiercely on the plants. To water in showery weather may seem anomalous, nevertheless, in a period of drought, if a slight passing shower occurs, that is the time to give a thorough watering, as the air is then in a fitter state to render the operation beneficial to the plants.

Protecting from sudden Spring Frosts.—It sometimes happens that in early spring unexpected morning frosts of some severity are experienced; and if the season is somewhat advanced, so that the sun has considerable power, and it bursts suddenly, as it were, on the frozen plants, much damage is soon done. This is supposed to be at that season when regular covering is not at all required. Under these circumstances, if the plants are found to be frozen, at once cover the beds with some shading material, to keep off the sun, and retain it till the plants and soil are both thoroughly thawed: it is quite immaterial what covering is employed, so that it keeps off the sun, and does not touch the plants. When they are quite thawed, admit the light gradually by first lifting up the covering slightly on the shady side, and gradually opening them till they become again fully exposed. This must be commenced early, before the sun reaches the plants.

Selecting Soil.—Though a loamy soil has been said to be proper for the Ranunculus, yet as loams may vary in quality, many may find it difficult to understand the precise kind of loam which is most proper for these plants. To such it may be useful to remark, that the soil, when taken from a pasture where the British Ranunculuses or Crowfoots abound and grow freely, has been found to be congenial to the growth of the garden varieties.

Longevity.—Messrs. Tyso, who are much experienced in the growth of Ranunculuses, state that the same variety may be propagated and perpetuated for about a century. Many of the varieties, which were highly esteemed half a century ago, are fast declining in energy, and now bloom less frequently and less vigorously. The culture of such, therefore, becomes abandoned for seedlings of equal or better qualities, and more vigorous constitution. They state that the individual roots retain their vitality for two years, if they are properly preserved.

Pot-culture.—Those who are so fond of these flowers as to wish to have them removable to their windows or greenhouses, when in bloom, may secure this by planting them in pots; but it is not the roots intended to produce blooms for exhibition that must be thus treated. Strong roots of the vigorous growing varieties, if planted three or so in a six or seven inch pot, in good free loamy soil, will produce tolerably good blossoms. For early blooms, plant in October, and plunge the pots just beneath the rim in coal ashes, in a cold frame for the winter. To succeed them, plant others in February, and plunge the pots in a warm border. Just before the period of blossoming, or after the flowers are considerably advanced, the pots may be lifted, cleaned, and removed to a convenient place, where they will be sheltered from excessive sun heat.



PLEUROPHYLLUM SPECIOSUM.

(*Dr. J. D. Hooker.*)

THE SHOWY RIB-LEAF.

THIS plant has also been named *Albinea oresigenesa*, by Hombron and Jacquinot, in a French book called *Voyage au Pole Sud.* It is one of the larger growing class of herbaceous plants, and must have a very grand appearance when in bloom. It grows from two to three feet high, with an upright stem, at the base of which—that is, springing from the roots—are the large plaited or ribbed leaves, reminding one of those of our common rib-grass, but very much larger. At the top of the stem is situated the elongated terminal raceme of flowers, which are each two inches across, and of a lively purple colour. It is found both in Campbell's Island and Lord Auckland's Group, growing near the sea, chiefly on wet banks and in marshes; and it is also met with ascending the mountains; but in the latter situations it exists only in a stunted form.

The plant is, we believe, not yet introduced to this country in a living state. It was met with by Dr. Joseph Dalton Hooker, who accompanied the exploring expedition to the South Polar Seas, under Sir J. C. Ross, and was brought home by him among his collection of dried plants. There is no doubt it would prove to be quite hardy in this country, and would form a very desirable herbaceous perennial of the larger growing class, suitable for the back part of flower borders, accompanying the Dahlia, Chrysanthemum, perennial Sunflower, and other plants of that class. Judging from its habitat, it will most probably be found to thrive best in situations where the soil is moderately moist.

The genus belongs to the natural order of Composite plants, and ranks in the section (Tubulifloræ), in which the hermaphrodite florets are tubular. The present species, *P. speciosum*, has been beautifully figured in Dr. Hooker's *Flora Antarctica*, from which figure our engraving was prepared.

THE HELIANTHEMUM, OR SUN ROSE.

The Helianthemums constitute a somewhat numerous group of small undershrubs, or trailing suffruticose plants, mostly hardy, or nearly so, well suited for rockwork, and producing a succession of gay, though fugitive blossoms, through the greater part of the summer. In company with the species of a nearly allied genus, the Cistus or Rock Rose, they constitute a very interesting group of hardy ligneous plants, which, from their distinctness of general character, as well as their beauty, deserve more attention than they receive. They are particularly suited to that class of cultivators who pride themselves on attaining excellence in cultivating—and collecting too—any particular families of plants; and though a *Cistacetum*, or collection of Cistaceous plants, would be less extensive, and perhaps less permanently beautiful than an *Ericacetum*, comprising the whole range of what are called American plants, yet as a distinct feature in the scenery of a garden, it would be as appropriate and desirable, where space and situation were alike favourable to its introduction.

The name *Helianthemum* is derived from *helios*, the sun, and *anthemon* a flower; the idea "sun-flower" arising from the circumstance of the opening of the flower in the morning, or at sunrise, and the falling off of the petals in the evening, or at sunset. The flowers both of Cistus and Helianthemum are somewhat fugacious, lasting only for a few hours during the day while the sun shines, and rarely, if ever, continuing till the second day. If the sun does not make its appearance, and the weather is consequently dull and heavy, the flowers remain unexpanded; and if this continue for several days together, they will decay in the bud. The trivial name Sun Rose, corresponds with that of Cistus, which is Rock Rose, the appellation of rose being probably originally applied from the resemblance in form between some of the larger Cistuses and the blossoms of a single flowered rose.

Rockwork, and a warm and sheltered situation, are the conditions most favourable to the cultivation of these plants. Rockwork is not indeed an indispensable condition, so that the soil is quite free from stagnant water, and of the character known as dry soil, but the semi-trailing habit of most of the kinds adapts them for such situations, which also favour and secure that dryness of the soil in which they delight, so that they are never met with in a more healthy and vigorous condition than when planted on rockwork. Where it is not convenient to plant them on rockwork, a well drained border, sloping to the south, will be proper for them: here, at suitable distances, two or three large rough stones may be set into the ground, a few inches apart, forming a rude hollow between them, into which the plants may be put in appropriate soil; in such cases, the stones should stand from three to six inches above the level of the border, and the plants between them may then be slightly raised above the ordinary level. In the same way, that is, with two or three rude stones set around them, some of the choice kinds may, if required, be planted, to fill small beds in sheltered parts of the flower garden, or on the lawn; in the latter case, it will be desirable to regard them merely as summer plants, placed there for the sake of their flowers, during that part of the year and the autumn, and destroyed as soon as affected by frost, the beds being occupied, for spring flowering, by other kinds of plants, and, if preferred, planted again with Helianthemums in the following year.

These plants, and their allies, the Cistuses, are also well suited for planting in vases for the summer season, the dryness and warmth to which they are thus exposed being very favourable to their growth and flowering. A vase planted round the outside with various coloured varieties of the trailing sorts, and filled up in the centre with those of more erect habit, and placed in a sunny situation, would have a very fine effect, if the colours were blended with judgment and taste. Or if preferred, they might be mixed with other plants in filling such vases. Being for the most part plants of small size, they would better adapt themselves to a vase of small, or, at least, of moderate dimensions, than to a very large one. Even when other plants are placed to fill up the principal part of the centre of these vases, and the rustic baskets and boxes, used in pleasure-ground arrangements, the trailing varieties would still form very elegant plants for the margins, and would succeed well, provided only that the soil was well drained, and the situation warm and sunny.

There would thus appear to be in flower gardens, at least four positions into which, under fitting circumstances, these plants may appropriately be introduced. They are also possessed of considerable interest when cultivated in pots; and a reserve stock should, as will be presently noticed, be always kept growing in pots, under proper shelter in winter.

The Helianthemums will grow freely enough in any light dry common garden soil, but where soil has to be provided for them, and there is an opportunity of exercising choice, nothing can be selected, which will be more suitable for them, than a light or sandy loam. Some of the kinds which are found wild in this country are met with abundantly in chalky districts, so that they succeed well in soil of a calcareous nature. The most important point as regards soil would appear to be that it should be dry, in the sense of well drained.

They are all freely propagated either by cuttings or layers. The tops of the young non-flowering shoots, with three or four joints, are proper for cuttings; from these, the lowermost pair (the leaves usually grow opposite, that is, in pairs one opposite the other) of leaves should be cut off clean with a sharp knife, and a transverse cut made close below where they joined the stem; a few only should be prepared before they are planted, lest they become shrivelled through evaporation from the cut surface, and it is better too to plant them when comparatively fresh than to allow them to get dry and then to immerse them in water to freshen them up again. They should be planted, not too close together, under hand-lights, in firm sandy soil; or they may be planted in pots of sandy soil, and the pots plunged under hand-lights, either of which will answer. If this be done in June or July, the cuttings will be well rooted, and may be potted singly into small pots, and become nice bushy little plants before winter; and if well kept through that part of the year, will be strong for planting out in the following season. If the obtaining of strong plants for planting out is no object, and a reserve stock only is required, then the cuttings may be planted in August or September, and kept in the cutting pots through the winter, thus occupying less space in storing than when separate pots are employed; in the spring they may be potted singly. The young plants should in all cases be kept topped while young, to make them bushy. Thus, soon after potting—when they have just "taken with the pots," as the phrase is, the tops may be pinched out at the fourth or fifth set of leaves, or at about three inches high; afterwards they may be topped at the second or third joint, two or three times repeated before the time of planting out, if they grow fast enough to render this necessary. Those grown for planting out should be shifted in spring, to increase their size and strength.

When seeds are produced, they should be sown as soon as sufficiently ripened, in pots of sandy soil, and set in a cold frame; the plants, when large enough to handle, may be potted singly and treated as cuttings.

It has already been remarked that a reserve stock of all the kinds (especially the tender ones) should be kept in pots and protected through the winter. This is necessary, because some of the kinds are not hardy enough to bear our winters with certainty, and most of them are *liable* to be destroyed or seriously damaged if the weather prove to be severe. Of the smaller trailing sorts, strong young plants, managed as already pointed out, answer every purpose: of the others, a moderate-sized reserve plant will mostly make good progress in the summer season; but if large specimens are required, or if it be an object to preserve good plants of any choice or scarce kinds, then they must either be taken up very carefully in the autumn—a practice which may sometimes succeed—or what is far better, they must be protected by means of mats placed about them a short distance from the branches, and a good thickness of litter laid about their stems and over their roots. With a little care and attention in thus protecting them (providing the soil is well drained,) there will be no serious difficulty in preserving any of the sorts, except in extreme winters.

The annual species are mostly very small plants, but exceedingly pretty. *H. guttatum* in particular, which can always be purchased in the seed-shops, is especially worth growing among choice curious plants. Both it and the other annual kinds are raised from seeds, which should be sown in pots or pans in March, and kept in frames for a time, the plants being afterwards transplanted out-doors into light, dry soil in May, or when of sufficient strength. The seeds may also be sown, both in March and April, in the open border, in order to secure a succession of bloom. They grow well in heath soil.

The Helianthemums are very prolific of varieties, and, no doubt, by careful hybridizing, the size and beauty of the flowers might be much increased. For this purpose, the cistuses might be crossed with them, by which means size and variety of colour would be acquired; and the different habits might be modified or united with improved blossoms, as has been effected among other plants. For an amateur who might take up this tribe of plants, this would be a delightful occupation; and if prosecuted with energy, and guided by sound judgment, the result could not fail to be satisfactory.

The fugacious nature of the flowers has been incidentally noticed; this might seem to open an objection to their cultivation on any extensive scale; but, in truth, the supply of flowers is in most cases so profuse, that the objection is of little practical weight. When they once begin flowering they are rarely deficient of bloom, during the proper period of their inflorescence—which in some cases extends over several months, if the weather is favourable to their development.

Probably some of the varieties which have been introduced, and are recorded in catalogues, are not now in cultivation, the winter of 1837-8, and that again of 1846-7 being a severe trial for many of them, if not specially preserved. They are, however, mostly within the possibility of being reintroduced.

The following are some of the hardier species, and they are all handsome kinds:—

H. alpestre (alpine Sun rose), yellow.

H. Andersoni (Anderson's Sun rose), diverse, some flowers yellow, others straw colour.

H. apenninum (Apennine Sun rose), white.

H. barbatum (bearded Sun rose), yellow.

H. croceum (copper-coloured Sun rose), deep yellow.

H. grandiflorum (large-flowered Sun rose), pale yellow.

H. hyssopifolium (hyssop-leaved Sun rose), three varieties, saffron coloured, reddish copper coloured, and double copper coloured.

H. leptophyllum (slender-leaved Sun rose), yellow.

H. macranthum (large-flowered Sun rose), creamy white, double and single flowered.

H. mutabile (changeable Sun rose), three varieties, white, rose-red, and double-flowered rose-red.

H. Milleri (Miller's Sun rose), saffron coloured.

H. rhodanthum (red-flowered Sun rose), bright red.

H. serpyllifolium (wild-thyme-leaved Sun rose), yellow.

H. variegatum (variegated Sun rose), diverse, some flowers red, others red and white, others white.

H. venustum (beautiful Sun rose), crimson.

THE CULTIVATION OF THE FILBERT.

It is not generally known, except to professional gardeners—or, if known, the knowledge is seldom acted on—that a filbert tree may be rendered productive in almost as small a space as is occupied by an ordinary gooseberry or currant bush. In fact, under favourable circumstances, the produce of these neat bushes is astonishing. We propose, therefore, to explain this mode of cultivating the filbert; and in doing so shall avail ourselves of some excellent directions by the Rev. W. Williamson, published in one of the early volumes of the *Transactions of the Horticultural Society.*

The first consideration in making a plantation, is to select a proper soil; for if that be not congenial to the constitution of the plants, we cannot expect any great success. The soil in which the Filbert is found to flourish best, is a hazel loam of some depth, with a dry subsoil. If the subsoil be too retentive of moisture, the trees are apt to run too much to wood, without throwing out those short twigs upon which the fruit is generally produced. In that part of Kent which is famous for the cultivation of the Filbert the soil is loam upon a dry sandy rock. It may be taken as a general rule, that soil which is proper for the growth of hops, is also congenial to the Filbert.

The Filbert requires a considerable quantity of manure; the grounds in Kent are dressed every year, or at least once in two years. Every kind of manure is beneficial; but old woollen rags are found to produce the greatest effect.

There are four methods of raising the plants; by suckers, layers, grafting, and sowing the nuts. Each may be practised according to the peculiar object of the cultivator; but the best method is by suckers; they come sooner into bearing, and make stronger plants than either layers or grafts. They are taken from the parent plant generally in the autumn, and planted in nursery beds, (being first shortened to ten or twelve inches,) where they remain three or four years. They are slightly pruned every year, in order to form strong lateral shoots, the number of which varies from four to six. The most free growing plants are obtained by sowing the nuts; but they are so long in coming to a productive state, and are besides so much inclined to degenerate into inferior varieties, that this method should not be resorted to in making a permanent plantation. The plants raised by layering and grafting are of more humble growth, and therefore better adapted for small gardens where economy of space is made an object.

The method of pruning the Filbert being different from that of every other tree, and not generally practised, a particular explanation of it will be necessary. Mr. Williamson has done this so clearly, that we cannot do better than quote his words, which follow:—Before any one can possibly prune a tree with propriety, it is necessary that he perfectly understand the mode of its fructification. The fruit of the vine is produced only upon shoots of the preceding year; cherries are grown chiefly upon short spurs emitted from the sides of the larger branches; if, therefore, the last year's shoots of the vine, or the spurs of the cherry tree are destroyed, there can be no fruit. Now, in some respects, the Filbert is similar in its fructification to both these trees; the bearing branches being *always* those of the preceding year, similar to the vine, and these branches, if the tree be properly pruned, might with great propriety be called spurs, allowing for the difference between the filbert and the cherry; these short twigs or spurs are not more than a few inches long, every bud of which, in a good year, produces fruit. The great object of the following method of pruning is to cause the trees to throw out these spurs in great abundance; and when they are got to a proper bearing state, more than sufficient will be produced. But though it is the usual practice to plant the suckers in nursery beds, I would advise every one to plant them where they are to remain, whether they are intended for a garden or a larger plantation: and after being suffered to grow without restraint for three or four years, to cut them down within a few inches of the ground. From the remaining part, if the trees are well rooted in the soil, five or six strong shoots will be produced. Whichever method is practised, the subsequent treatment of the trees will be exactly the same. In the second year after cutting down, these shoots are shortened; generally one-third is taken off. If very weak, I would advise that the trees be quite cut down a second time, as in the previous spring: but it would be much better not to cut them down until the trees give evident tokens of their being able to produce shoots of sufficient strength. When they are thus shortened, that they may appear regular, let a small hoop be placed within the branches, to which the shoots are to be fastened at equal distances; by this practice, two considerable advantages will be gained; the trees will grow more regular, and the middle will be kept hollow, so as to admit the influence of the sun and air; but this, in a large plantation, would be almost impossible, nor indeed is it necessary, though in private gardens, where regularity and neatness are almost essential, it ought to be practised. In the third year, a shoot will spring from each bud; these must be suffered to grow till the following autumn, or fourth year, when they are to be cut off close to the original stem, and the leading shoot of the last year shortened two-thirds. In the fifth year several small shoots will arise from the base of the side-branches which were cut off the preceding year; these are produced from small buds, and would not have been emitted, had not the branch on which they were situated been shortened, the whole nourishment being carried to the upper part of the branch. It is from these shoots that fruit is to be expected. These productive shoots will in a few years become very numerous, and many of them must be taken off, particularly the strongest, in order to encourage the production of the smaller ones; for those of the former year become so exhausted, that they generally decay; but whether decayed or not, they are always cut out by the pruner, and a fresh supply must therefore be provided, to produce the fruit in the succeeding year. The leading shoot is every year to be shortened two-thirds, or more, should the tree be weak, and the whole height of the branches must not be suffered to exceed six feet. Every shoot that is left to produce fruit, should also be tipped, which prevents the tree being exhausted in making wood at the end of the branch.

The Filbert is a monœcious plant, and consequently produces the male and female blossoms separately on the same tree; the slender scarlet filaments which are seen issuing from the end of the buds early in the spring, are the female, or productive blossoms; the barren, or male blossoms, are formed on long cylindrical catkins, which fall off as soon as they have performed their office; in pruning, care must be taken to leave a due supply of these to fructify the female blossoms, or our previous trouble will be entirely useless; this may be done without difficulty, for they are perfectly visible at the time of the pruning.

The method of pruning above detailed might in a few words be called a system of spurring, by which bearing shoots are produced which otherwise would have had no existence. It frequently happens that a strong shoot springs from the root; and should any of the first year's or leading branches be decayed, or become unproductive of bearing wood, it will be advisable to cut that entirely away, and suffer the new shoot to supply its place, which afterwards is to be treated in the same manner as is recommended for the others. Old trees are easily induced to bear in this manner, by selecting a sufficient number of the main branches, and then cutting the side shoots off nearly close, excepting any should be so situated as not to interfere with the others, and there should be no main branch directed to that particular part. It will, however, be two or three years before the full effect will be produced.

But though this method of cultivation has long been celebrated, yet it does not appear to me so particularly successful as to deserve the encomiums which have been bestowed upon it; for though thirty hundred-weight per acre have been grown in particular grounds, and in particular years, yet twenty hundred-weight is considered a large crop, and rather more than half that quantity may be called a more usual one; and even then, the crop totally fails three years out of five; so that the annual average quantity cannot be reckoned at more than five hundred-weight per acre.

When I reflected upon the reason of the failure happening so often as three years out of five, it occurred to me, that possibly it might arise from the excessive productiveness of the other two, the whole nourishment of the trees being expended in the production of the fruit; and that, consequently, they might be unable properly to mature the blossom for the following year. We know that peach and nectarine trees may be so pruned, as to force them to bear a superabundant quantity of fruit in some one year; but we find that a regular crop in succession is thereby prevented, and that too for several years. In order to ensure fruit every year, I have usually left a large proportion of those shoots, which, from their strength, I suspected would not be so productive of blossom buds, as the shorter ones; leaving them more in a state of nature than is commonly done; not pruning them so closely as to weaken the trees by excessive bearing, nor leaving them so entirely to their natural growth, as to cause their annual productiveness to be destroyed by a superfluity of wood. These shoots, in the spring of the year, I have usually shortened to a blossom bud, for the reason before given. The great art of pruning is to produce the greatest quantity of fruit without injury to the crop of the succeeding year, which, in my opinion, is not done by the Kentish method. But by observing the rule which I have laid down, though the trees do not perhaps bear so great a weight in any one year, as by the method before detailed; yet the crops in the whole certainly are not less; with this great advantage both to the public and private grower, that a moderate but regular crop is ensured in every successive year. I think that by this plan the average weight in the whole will be greater. In the year 1819, which was a very productive one, I grew two hundred-weight of filberts, (weighed when gathered) upon fifty-seven trees, the greater part of which were not above six years old, (reckoning from the time of their being cut down,) and growing upon three hundred and sixty square yards of ground; which is after the rate of twenty-seven hundred-weight per acre, and upon part of the ground ten more trees are now planted, which, if they had come to a bearing state, would have increased the quantity to more than is considered as an extraordinary crop, besides having grown upon the older trees a moderate but regular quantity for several years preceding.

When the trees are grown on this plan, it is necessary, in order to strengthen the tree as much as possible, to eradicate the suckers from the root; this is effected by exposing the roots, to a moderate distance from the stem, to the frosts of winter, and the necessary excavation is in the spring filled with manure.

As Filberts are several years in coming to perfection, it is usual to plant hops, standard apples, and cherries, among them, and when they come to a bearing state, the hops are destroyed, and the fruit trees suffered to remain. The ground is then planted with gooseberries, currants, &c. and an under crop of vegetables is likewise frequently obtained. If this were not practised, the crop of Filberts alone, except in particular years, would not defray the expense. The distance at which Filberts are planted must depend upon their being mixed with other fruit.

THE EGYPTIAN PEA.

THE following account of this pea has been transmitted to us:—A vase found by Sir Gardener Wilkinson in a mummy pit, with an Egyptian sarcophagus, 2,845 years old, was presented to the British Museum. On examining the vase, which was supposed to have contained valuable relics, only a few grains of wheat, vetches, and peas were discovered. Three of these peas were presented by T. J. Pettigrew, Esq., to Mr. Grimstone, of the Herbary, Highgate. On the 4th of June, 1844, these were planted in compost, resembling as nearly as possible the alluvial soil of the Nile, and they were placed in a forcing frame. In thirty-five days, one of the seeds germinated, and in that year produced nineteen pods, from which fifty fine peas were preserved. In 1845, they were sown in the open air, and made luxurious growth. The pea is described as growing about three feet high, each pea throwing up two or three main stems, which bear many branches. The blossoms grow several together on short stalks; they are white with green stripes, and remain attached to the base of the pod during its growth; the pods are scimitar shaped. It is recommended to plant the seeds eight inches apart, with the eye ranged lengthways in the row, by which means the branches are said to be thrown out right and left, and by the aid of a row or two of string on each side, they will be supported without sticks. Through the long drought of 1846, when almost every one's peas were destroyed, these Egyptian peas—without water—continued green and flourishing, and bearing from 70 to 120 pods on each stem. The original seeds were very small, but by cultivation they have now acquired the size of our marrowfats. It is proper to state, that we have not ourselves seen these peas, nevertheless they are doubtless worthy the notice of the curious.

AN ABSTRACT OF REPORTS, PAPERS, AND PROCEEDINGS OF THE HORTICULTURAL SOCIETY OF LONDON, WITH NOTES BY A PRACTICAL GARDENER.

DISEASES OF FRUIT TREES.—*Mildew.*—When trees have been severely attacked by this disorder, they should be syringed on the first unfolding of the leaf, and at frequent intervals during the remainder of the season, perhaps once a week, with sulphur mixed with soap suds, and dashed violently with a rose syringe against the tree and wall, in such a manner that no part or leaf is left unsprinkled; by the continuance of such treatment, and close cutting out the infected shoots, it will be completely subdued and eradicated, though such leaves as have been injured will still continue to retain the appearance of disorder. The sulphur, instead of being in any degree hurtful to the peach tree seems rather to promote its growth. The collateral autumnal shoots being particularly liable to catch the infection, should be carefully nipped off as they push.—*Blight.* Under this denomination are frequently confounded two varieties of disease materially different in their appearance, and which I shall distinguish by the appellations of *blister* and *curl.* The former is generally confined to such peach trees as have glandular leaves, which are mostly subject to it in the months of April and May; and when attacked, it is not until the latter part of the season, if at all, that they become healthy and convalescent. The leaves of trees so attacked are crisp, and assume a swollen, crumpled, and succulent appearance; the shoots themselves are affected by it in the same manner, and never produce either good blossom or healthy wood. It is probably occasioned by the sudden contraction or destruction of the vessels, and extravasation of the sap, when cold chilly winds and frosts immediately succeed warm sunshine, and soft genial weather; in such case, the diseased shoots should be rubbed off where they can be spared; where not, the tops should be pinched down to the healthy part, which is generally at their lower end; and from the remaining eyes, fresh shoots will push in sufficient time to ripen perfectly. The curl principally attacks those sorts of the peach which have leaves deeply serrated and devoid of glands, and it probably proceeds in part from the same causes which occasion the blister, aided by the operation of drying winds. The leaves and tops of the shoots affected curl up and emit a saccharine secretion, which attracts the aphides; these, by extracting the juices of the leaves and shoots, destroy them, and the tree consequently perishes. Mulching round the stem of the tree, and keeping its head and the mulch moist by watering, will act as a preventive, or restore it to its health. The insects should be destroyed by fumigation with tobacco, or by washing the tops of the shoots with tobacco water, or by sprinkling them with snuff after watering.—*Gum.* This complaint is of frequent occurrence, and proceeds from a variety of causes; and it is in most cases incurable. It may be distinguished in the early stages of its progress, by brown or rusty spots appearing on the young shoots, which frequently gum, and die off the same season: should they survive, in the following spring these spots becoming blotches, open and bleed, the wound expands, and the virus gradually corrodes the adjoining parts, until it encircles the branch and destroys it. The cankered part, when cut transversely, exhibits the pith, alburnum, and rind, all tainted by the vitiated sap, which may be traced from the point where it takes its rise by its discoloured tint, to the wound whence it issues and forms gum; it is rarely confined to a few parts, but circulates through and affects the whole system to the extremities. Gum is the consequence, either of the plant being propagated from a diseased stock; or, if healthy originally, of the tree being planted in an unsuitable soil or situation; old gardens long worked, exhausted of that freshness so congenial to the peach, and saturated with acrid and corroding manures, rarely afford healthy peach trees; cold clayey ground, retentive of moisture, and such as have a sour or ferruginous substratum, which chills and cankers the roots, are equally pernicious to the peach tree; on such it generally throws out strong spongy and ill-ripened shoots during summer, which possessing a superabundance of crude watery juices, are frost-bitten in winter, and gum and perish the ensuing season. Cold raw summers, also, in which the mean heat is below the temperature necessary for the peach tree to elaborate its sap, or enable its vessels to perform their secretions perfectly, always tend to produce gum and canker in fruit trees. The disease also proceeds from wounds, or other external injuries, of which the peach tree is susceptible; in all cases, except that of wounds, topical applications fail in producing any permanent good effect; but where they are resorted to, the edges of the wound should be pared to the quick, all the carious parts cleaned out, and the whole covered with some durable composition, which will adhere and effectually exclude the air and moisture, in which, I believe, consists all the efficacy that any application can possess. One of the best, and most readily provided, is a mixture of tar and powdered charcoal, sufficiently fluid to be laid on with ease: perhaps as charcoal has been found a powerful antiseptic, it may have some effect in counteracting a tendency to putrefaction in the wound. The apricot, plum, and cherry, are also subject to gum; to the first it frequently proves destructive, but to the others it is less injurious.—*Canker.* Of all the diseases to which fruit trees are subject, the most injurious is the canker. In the pear and apple, proceeding from the same causes as gum in the peach, it resembles it in its progress, and is equally fatal in its termination. From the strong similitude their features present in common, we may consider them as diseases of the same class, though altered in their symptoms by the peculiar organization of the different plants, and the same remedies and precautions which have been prescribed in the one case are generally applicable in the other. The pear and apple, however, possess the advantage of having some varieties much hardier and less liable to canker than others; these, though in general of inferior quality, may, in case of the failure of choice sorts, be grafted on them, and succeed perfectly well where the others would perish. Being of opinion that no small proportion of both gum and canker, which are unfortunately so widely extended, have proceeded from the trees having been incautiously propagated from diseased stocks, by which means many valuable varieties of fruit have been brought into undeserved disrepute, I feel that I cannot too strongly impress on the mind of the cultivator the necessity that exists for his using the utmost precaution in the choice of scions for grafting or budding, and that none should be employed but such as are taken from trees perfectly healthy and free from these complaints, otherwise they will be most certainly transferred, and the diseases in that case perpetuated. Independent of any other cause, some sorts are, in consequence of their conformation, diseased from the seed; such, no skill or circumstances will ever render healthy. —*Age.* Old age, though not properly a disease in fruit trees, but the last stage of existence, which, in common with that of all other organized beings, contains the germ of decay in its bosom from its birth, yet, as it is accelerated by adventitious circumstances, so may it also be retarded by art. A tree though planted in the most favourable situation, and enjoying in youth the most perfect health, must, nevertheless, experience in time infirmities proceeding, amongst other causes, from the increasing difficulty with which the head draws its supplies of nourishment from the roots, as the distance between its extremities becomes more lengthened, and its vessels become more rigid and obstructed; but by grafting the young shoots on young stocks, these defects may in a great measure be done away, a new vigour imparted to it, and its existence prolonged to an indefinite term, when compared with that of human life.—*Letter by Mr. J. Robertson.*

[Although these remarks were made as long since as 1821, they contain many valuable suggestions applicable to the present day.]

GROWING MELONS ON OPEN BORDERS.—About the middle of March, the seeds for the first out-door crop are sown, and placed in a cucumber or other frame, where there is a tolerable heat. They are potted and treated in the usual way, till the final planting out. The first or second week in May, I prepare a bed on a south or south-west border, by throwing out the mould one foot deep and four feet wide, filling up the trench to half its depth with the stems and leaves of any vegetables that require clearing off from the quarters of the kitchen garden. The remaining half is made up with the exhausted linings of cucumber frames or pits, which I consider better for the roots of the plants to run in, than fresh dung from the stable-yard. The bed, when the materials are put in, has an elevation of one foot towards the back or wall side, and is firmly trodden down with the feet. The mould that was taken out is returned upon the bed to the depth of nine inches, and has a similar treatment, as regards treading. When the preparation is finished I set on hand-lights, four feet apart, along the centre of the bed, and plant a pot of plants under each light. Two or three plants will be sufficient for each light. When they are planted I give a good watering, and shut the lights close down, and let them remain so till the plants have nearly filled them, when they should be tilted up about two inches in front every fine day for a week or ten days. If the weather is dry and warm, I give gentle watering, but if dull or cold the plants are better without it. If the hand-lights happen to have ventilators at top, they will be better calculated for the purpose; these may be opened to give air, instead of lifting the light; this will let the damp air escape, and prevent the sun's heat from scorching the tops of the vines and leaves, which is apt to be the case if they are suffered to remain in contact with damp air, when so exposed. When the plants have nearly reached the top of the lights, or appear to get crowded with vines, the lights should be raised up and the plants let to grow out, in the same manner as is practised with Ridge Cucumbers. If the vines are very thick, a few of the weakest may be pinched off, and the top of each leading shoot or vine removed. No more pruning will be necessary for the season. Previously to the lights being raised, the bed should be covered over with a layer of short grass, or any dry litter that may be most convenient, to keep the vines and fruit clean. Setting the fruit at this season of the year is quite unnecessary. If the weather is hot and dry, frequent waterings will be required; but it will be better to give water in tolerable quantities once or twice a week, than oftener and in less quantity, for Melon plants are impatient of much moisture on their vines or leaves, being very apt to canker from it. To have handsome fruit, it will be necessary to thin them when they get to the size of walnuts, as they set very freely, often several dozens on a hill. The fruit will begin to ripen about the first week in August, and continue to be produced through that month and part of September. All waterings should terminate when the fruit begins to ripen, since the roots of the plants running amongst the decomposed vegetables will afford sufficient nourishment to the later fruits. To prolong the season, seeds may be sown three weeks later, and planted out by the same rule, and treated in every respect as above, till there is an appearance of frosty nights, when they may be protected by common cucumber or melon-lights, as is done with the early crops. By this means tolerably good Melons may be had till the end of October. The sorts grown by the above treatment were the Black Rocks, Scarlet Rocks, Green fleshed, Netted, and Early Cantaloup Melons.—*Letter by Mr. W. Greenshields.*

[Much of the success of growing Melons out of doors must depend on the season, and the situation. In a fine sunny season, with the beds situated in a warm sheltered spot, very tolerable fruit will be obtained of the hardier sorts, by the method here described.]

THE GLYCINE OR WISTARIA SINENSIS.—The *Glycine sinensis* was first introduced to this country from China in 1816. In May of that year Captain Robert Welbank, then commanding the Cuffnells, East Indiaman, brought a plant of it with him from China, and gave it to Charles Hampden Turner, Esq., of Rooksnest, in Surrey, who kept it in the pot in which it arrived until 1819, when it first flowered. The blossoms show themselves before the leaves; their first appearance is that of thick short pale green tufts, in which the buds of the flowers are enveloped by long pale hairy bracts, which fall off as the racemes advance. These when full-grown, are from eight to fifteen inches long, each bearing from eighty to a hundred flowers on an average; they are pendent, and have much resemblance to those of a Laburnum, except that they are of a very delicate bluish lilac colour, with a very agreeable fragrance. In a conservatory, the blossoms expand in March, more or less early, according to the heat of the house. Against a south wall in the open air they first appear in the middle of April, and last nearly a month. Without the protection of a wall the opening of the flowers is in May, and their beauty continues till June. The plants frequently put out a small second crop of flowers on the young shoots of the year, immediately after the spring blossoming is past, but these are not so fine as the first crop of flowers, though they are darker in colour; they are subject to drop off prematurely. In the autumn, another crop of blossoms is produced; these come in August, and though not so abundant as the spring flowers, have an advantage in being mixed with the foliage. This autumnal flowering does not appear in perfection on the plants which are placed on walls, or under protection; in such situations the racemes are produced as early as July, but as they expand, the flower buds fall off; being apparently unequal to sustain the heat to which they are exposed. The leaves are as beautiful in their way as the flowers; they are nearly a foot in length, of a peculiarly delicate pale green, and elegantly pinnated. The plant does not require any nicety of management; it is impatient of the knife, and succeeds best in good rich loam. The branches are of considerable length, and in a conservatory should be placed near the glass. When trained against a wall, it has been found that the branches which are carried horizontally, produce a greater abundance of flowers. When not placed on a wall, they require the support of a stake or trellis. The plant is readily propagated by laying the young green shoots in pots buried in the earth, and as these advance in growth, continuing to peg them down into fresh pots, leaving some eyes or buds above the ground; and thus many plants may be obtained from a single branch. Cuttings both of the wood and of the roots, planted in loam, are said to succeed. I believe it has not yet borne ripe seed in this country, nor has any been brought from China. —*Letter by J. Sabine, Esq.*

[There is hardly a more beautiful hardy creeping plant than the *Wistaria sinensis.* Trained along the top of a wall, just beneath the coping, the wall being covered with ornamental evergreen plants, its appearance when in bloom in the early part of May is most charming. It is a fine plant for ornamenting the fronts of cottages, or any other buildings. We have seen a single branch introduced with capital effect along the top of a span-roofed greenhouse.]

CONTEMPORARY WRITINGS,

AND ORIGINAL NOTES CONNECTED WITH HORTICULTURE AND NATURAL HISTORY.

Moss or Lichen on Fruit Trees.—Old orchard fruit trees, especially in situations where they do not grow kindly, are very apt to get the branches and trunks covered with lichen and moss, which does them injury. This moss and lichen may be cleared off in several ways, but one of the simplest, and a very effectual one, is to well dredge the trees when they are damp with gentle rains or heavy fogs, with *dry* wood ashes. If this is persevered in for a short time, the trees will be effectually cleared.

Sloping Banks in Gardens.—Those who have small gardens and desire to make the most of them, may effect considerable gain by disposing of part of the surface in flat ridges, instead of making it level; this plan also serves to protect and shelter the crops, and secures the advantage of various aspects. The ridges may be formed from eight to twelve feet wide at the base, according to the depth of good soil; they should run east and west for the sake of securing a south (or early) and a north (or late) aspect; the elevation of the ridges may be more or less according to the available depth of soil; from two to three feet will be suitable.

The Papaw Tree.—This tree, the *Carica Papaya* of botanists, fruits freely in the hothouses of the Duke of Northumberland at Sion house. The fruit of this plant is used as an esculent, and when cooked is esteemed by some, but has little to recommend it. The tree itself has the very singular and hitherto unexplained property, of rendering animal substances tender, by causing a separation of the muscular fibre. Newly killed meat suspended among its leaves is said to become tender in a few hours. It forms a handsome tree, with large palmate leaves, and greenish coloured flowers, the sterile and fertile ones growing in separate bunches, the latter much larger than the former, and succeeded by good sized egg-shaped fruit.

The Vesuvius-pippin Apple.—This apple was raised from some fruit obtained by A. Arcedeckne, Esq., from the Priory, on Mount Vesuvius; it is called by the monks there the Mela Appia, and as it resembles a good deal the Lady Apple, or Pomme d'Api of the French, it has been supposed that the latter name is a corruption of the former. The fruit is small, oblong contracted beyond the middle; the colour is yellow and bright red, and the skin glossy; the flesh is crisp and juicy, sweet and slightly perfumed. It ripens and is in perfection in the middle of January, and will probably keep till April.

Fertilizing Cucumbers.—It is not only unnecessary to fertilize the blossoms of cucumbers, so far as the growing of fruit fit for table is concerned, but positively detrimental, where fine and symmetrical fruit are required, such as for exhibition. This admits of explanation. When the blossom is fertilized, the young ovules (future seeds) begin to form their embryo, and as all the ovules in the fruit are seldom or never influenced in this way, those which are influenced, when they begin to grow, cause the fruit to swell unequally, thus producing an unsymmetrical outline. But though the fruit, as an horticultural production, will come to maturity without the fertilization of the ovary having been effected, yet the seeds of such plants will be abortive; consequently when fertile seed is required, it is necessary to have recourse to fertilization. In the case of unfertilized fruit, too, the blossom remains expanded much longer than when the fertilization has been effected; and this is a point of importance to exhibitors. The object in growing cucumbers, whether for show or use, being not to produce seed, but long handsome fruit, it follows that the contact of the pollen with the stigma should be prevented, for in preventing this, we prevent the rapid decay of the flower, and take away the check to longitudinal extension, and the tendency to unequal lateral protuberation.—*M.*

To destroy Aphides.—A very simple and effectual mode of killing aphides, where fumigation is objected to, is to syringe the plants thoroughly with a mixture of equal parts of clear lime and soot water, with one-sixth part of tobacco liquor added. A fine syringe should be used to apply it, as the object is to *wet* rather than *wash* every part of the plant. The dead aphides may afterwards be washed off with clear water. They may also be destroyed by using a solution of poly-sulphuret of calcium, obtained by boiling lime and flour of sulphur in water, and syringing the plants with the clear liquor. Both these methods are clean, which is a recommendation in conservatories and domestic greenhouses.

The Chocolate Nut.—The chocolate nut tree (*the obroma Cacao*) has recently been fruited for the first time in England—probably in Europe—in the garden of the Duke of Northumberland, at Sion house, Brentford. A ripe fruit was exhibited at a meeting of the Horticultural Society, on January 19, 1847. The fruit is oblong, pointed, and of a bright yellow colour, closely filled with large seeds, which, when roasted, form the pure cocoa of commerce. Whole forests are formed of this tree in Demerara. The plant at Sion is about four years old and seven feet high.

Forcing Turnip-greens. — During the prevalence of frost, a good addition to the stock of vegetables may be made by placing some roots of turnips in a slight heat; in a week or two they will afford a good cutting of greens. Where there is a vinery, or any other warm place at command, a quantity of the roots may be set close together. A cellar, where a little warmth can be given them, will do; but in this case they will grow blanched. When so treated they afford two or three good cuttings, and the roots may be afterwards given to pigs or cattle.

Planting out Camellias in Conservatories.—A most important point to be attended to in planting out Camellias—or indeed any other plants—is to take care that the roots are disengaged as much as possible, by breaking the hard ball of earth around which the roots are usually matted. Thus the roots come in contact with the fresh soil, and strike out vigorously; and the water which is applied also reaches the centre of the roots. This disengagement of their roots is often secured by lifting the ball of earth and letting it fall heavily down, repeating this until it becomes loose. When they are planted out with the old balls of earth entire, the plants are likely to suffer, or perhaps die, for want of water, the latter not penetrating the hard soil, but passing off by the looser medium which surrounds it.

Roots of the Scarlet-runner Bean.—The Scarlet-runner Bean (*Phaseolus multiflorus*), produces long irregular tapering fleshy roots, somewhat resembling those of the marvel of Peru: these, if protected from frost by a bank of earth, will break out again in the spring, the plant being perennial. In this way they may be grown year after year without sowing fresh seeds. The roots, however, are poisonous, and must on no account be eaten.

The Sweet Montmorency Cherry.—This is an American seedling, supposed to have been raised from the Montmorency cherry of the French, an early acid fruit. The fruit of this variety is borne in pairs; it is small, nearly round, slightly flattened at the base, with a shallow suture on one side, and a distinctly indented point at the end; the skin is on the sunny side, when mature, of a deep red, somewhat mottled and cloudy, and of a pale amber in the shade; the stalk is rather slender, about three quarters of an inch long, inserted in a small shallow round hollow; the flesh yellowish; rich and sweet; the stone small, The tree is of upright habit, with a smooth clean stem, strong shoots, and medium sized, dull green, wavy foliage. The fruit hangs well on the tree, and is eaten (in America) from July 15th to August 5th. It is one of the latest sweet cherries. The fruit while growing is ordinary, and when ripening very bitter, but this passes away when allowed to hang till it is fully coloured and ripe.

Manure for Hops.—Mr. J. C. Nesbit recommends a manure composed of guano, gypsum, nitrate of soda, and common salt, as being best calculated to return to the soil the substances extracted by the hop, thus enabling it to produce good crops. Trials which have been made with this mixture have proved to be successful. In one case the proportions of three cwt. of guano, one and a half cwt. of saltpetre, half a cwt. of gypsum, and one and a half cwt. of common salt, were applied, at a cost of 70*s*. per acre, with great success.

Propagation of Gloxinias.—These may be raised either from seeds, or by cuttings of the young shoots, or by leaves. The seeds should be sown in shallow pans of sandy soil, on a thin bed of silver sand, a little of which should afterwards be dusted over them. Place the pan in a brisk hot-bed, and cover it with a bell-glass until the seeds vegetate. The cuttings should be taken off when the young shoots are about three inches long; plant them in silver sand, and set them in a hot-bed. Leaf propagation may be done in two ways:—1. Insert the leaf in sand like a cutting, the base soon forms a knob, from which a bud is subsequently developed. 2. Cut the principal rib at the back of the leaf through with a knife in several places, an inch or more apart; then press the leaf flat upon the sand, and place a few small stones on the top near the incisions, to keep it down flat; the ribs are to be placed downward; then cover with a bell-glass, and place in a brisk heat; little knobs will be formed at the incisions, which in due time will put forth buds. Keep them all, while growing, in a warm moist atmosphere, and when their leaves are mature, allow them to become comparatively dry, in which state they may be set away in a cool frame for a month or two; after which they should be potted in fresh soil, of equal parts sandy peat and leaf-mould, set in a warm pit, and gradually watered until they are fairly started, when they must have plenty of heat, light, and water, and a little weak liquid manure once or twice a week.

VERONICA SPECIOSA AS A STANDARD.—This fine greenhouse plant is said to have a noble appearance when grown as a standard; it is an excellent winter blooming plant.

TO PREVENT IRON FROM RUSTING.—M. Zeni states that iron, painted over twice with the following composition, and exposed daily for some time to the action of the sea, remained entirely free from rust:—With eighty parts of pounded and very finely sifted brick-dust, mix twenty parts of litharge; this is then to be ground upon a slab with linseed oil, to the consistence of a thick paste, and then diluted with oil of turpentine. Before using, the iron should be rubbed quite clean.

HOW TO PRUNE.—In pruning all kinds of plants the proper way of making the cut is thus:—With a sharp knife make one clean cut through the shoot, commencing on the opposite side from a bud, and bringing out the knife on the other side, *close above the top of the bud*, the cut forming a sloping wound with an angle of about 45 degrees. When growth commences such a wound as this is soon healed. It is wrong to cut so as to leave a snag above the terminal bud which is left; equally so to cut through to the *level of the base of the bud*, or nearly so; and the common mode of making a long irregular cut, beginning much below the bud, and ending considerably above, is quite as bad, and even less workmanlike.

SEEDLING PELARGONIUMS.—The quality of a flower, as regards its usefulness to the cultivator, is never thoroughly ascertained under three years from the time of raising. Those qualities, indeed, which relate to "properties" may be regarded as settled the second season of blooming, but the grower has also to ascertain the capacity of the plant to answer his ends. Some varieties naturally bloom in their perfection early in the ordinary season, others late; and the grower for exhibition, who has to manage his plants so as to have them in perfection at a fixed day, requires to know these, so that he may grow the early varieties for his earliest purposes, and reserve the later ones for the later shows. There are indeed some kinds that bloom tolerably well at any part of the season, but many others come out of character as it is called, when grown out of their proper season.

ANNUALS.—Well grown Annuals contribute much to the gaiety of the garden; and although not quite so well adapted for masses as some of our half-hardy plants, yet they are extremely eligible for borders and mixed beds. They are frequently treated with too much kindness, sown in soil of too rich a character, and, of course, "run too much to leaf." All those who who can spare the means, should devote two little frames to their especial cultivation during the early part of spring, the one with bottom-heat, the other without it. That with bottom-heat would be better with a plunging material, possessing a permanent heat of 70 degrees, the pots placed very close to a clear glass roof, and matted up at night. The other frame, without bottom-heat, should be raised a foot above the ground level, where water cannot possibly stand, and should be filled to within a foot of the glass with cinder ashes. They should be both well watered with boiling water previous to placing the pots, to destroy all insects. Both the tender and hardy kinds are conveniently raised in the frame with heat; managing the sowings in a successive way, according to the period in which they are required to blossom. The hardy, however, would have to be removed to the cold frame as soon as an inch high; they would there harden down in a couple of weeks, and be ready for turning out into the borders. The tender annuals, if in the warm frame they are being drawn up weakly, might be removed to warm and light shelves in the greenhouse or other structures. The soil for the hardy kinds should be chiefly plain loam; this will be found to produce a sturdier plant than rich vegetable matters, and much blossom, in proportion to the amount of foliage. All hardy annuals are best raised in pots through the summer, in cool frames, turning them out when slightly pot-bound. How often are annuals seen in rich borders, of immense size, yet contributing little to the decoration of the garden, from their paucity of flowers; and in a wet and dull summer actually rotting in the ground!—*G.C.*

Incrustations in hot water Apparatus.—Notwithstanding that clear soft water only may be used in filling an hot water apparatus, yet more or less of sediment, and of a hard slaty substance will become deposited within a few months; and where less attention is paid to the nature of the water employed, the deposits will be greater in proportion. To prevent this sal ammoniac (or muriate of ammonia) should be mixed with the water, at the rate of about an ounce to ninety gallons of water.

Rose Forcing.—Provins and Moss Roses may be forced annually with the utmost success, without giving them a season of rest. The plants are introduced into heat (a shelf near the glass in a vinery will do) in succession, and as soon as the most forward flowers have fully expanded, they are removed to a greenhouse stage to display their beauty, and to ripen their wood. About the middle or end of May, the pots are fully exposed to the open air, plunged to the rim in coal-ashes. Nothing more is required until the first week in October, when the same season's growths are to be pruned in to two buds, and the plants placed in a shed for a week, to moderately dry the soil previous to re-potting them. Then the ball is turned out and the soil shaken from the roots, the strongest pruned in, but all that are fibrous retained. The plants are then repotted in the same sized pots (9-inch), using a mixture of two parts strong loam, two parts well decomposed cow-dung, and one part rotten leaf mould; and placed under a green-house stage, until required for forcing.—*G. C.*

Oncidium unguiculatum.—This new yellow-flowered oncid is one of the best which our gardens contain. It is a strong growing species, flowering freely; it blooms during the winter season; and the blossoms remain in a fresh state for an incredible length of time. It was first flowered in August 1846, by C. B. Warner, Esq., whose gardener writes (Jan. 19)—"It has now on it forty open blossoms, and is likely to continue in blossom for another month; it has never had less than forty flowers on it since October, and would have had many more had not several branches been cut for bouquets, for which it is most useful. If cut at an early stage of its flowering it will send out lateral flowering branches at the base of those which have been removed. As to winter decoration it holds the first rank in the orchid house, on account of its beauty and the length of time it continues in bloom." We can confirm this from our own experience, having observed the same individual blossoms to last for two or three months.

Mulberry Trees and Silkworms.—Mrs. Whitby, of Newlands, in Hants, has, during the last ten years, been directing her attention to the rearing of silkworms, with a view to their produce, and with considerable success. In 1836 she procured a number of plants of the mulberry of the Philippine Islands (*Morus albus, var. multicaulis*); she also bought silkworms' eggs at Novi, which is said to produce the finest silk in Italy. Some difficulty was experienced in winding off the cocoons, and in 1844, a person acquainted with the process was engaged from France, and the result had been highly satisfactory in the production of silk fit for the loom. At the same time she learnt how to treat the mulberry plants: cuttings put into a cucumber frame with a slight heat, in October, 1844, and thence transplanted into the open ground in the following spring, in two years yielded on an average ten cuttings each plant, two pounds weight of leaves having previously been gathered from each for feeding the silkworms. One acre of land planted with 2,400 mulberry plants will, at the end of two years, yield from 20,000 to 24,000 cuttings. In 1846 Mrs. Whitby made some experiments to ascertain the relative value of eggs procured from four different places, and the following is the comparative weight and number of cocoons produced, all the worms being treated in every respect alike.

	Cocoons.		*oz.*		*Cocoons.*		*oz.*	
No. 1. English	77	weighed	2,	and	77	produced	¼	raw silk
2. Poictiers	55	,,	2,	,,	460	,,	1¾	,,
3. Bourdeaux	47	,,	2,	,,	480	,,	1¾	,,
4. Italian	45	,,	2,	,,	213	,,	1	,,
5. Bengal	340	,,	2,	,,	. .		. .	

The Bengal cocoons were very inferior to the others. Mrs. Whitby finally showed how the English grower could compete with the Bengal grower, the latter having four crops, and the former only one annually; one cocoon reared in England being equal in weight to four of the Bengal; and the raw silk selling at from 23*s.* to 25*s.* per lb., while the Bengal raw silk fetches only from 10*s.* to 11*s.* per lb.

Cocoa Disease.—According to the Jamaica papers the cocoa of that country, presumed to be the *Caladium esculentum* (or *Colocasia esculenta*), is destroyed by a disease similar to that of the potato. The Cocoa, or Syre, grows from three to seven feet high, and consists of the leaves, the heart, and the fingers, or tubers. The disease attacks the head first, the heart of which is converted to a black pulp, and at length becomes a hollow tube; the leaves then droop and die, and the growth of the fingers, or eatable part, stops. There is no peculiarity of soil or aspect exempt from destruction; and on examination either of the soil or the plant nothing can be discovered to lead in the remotest degree to the cause of the disease.

Strawberries.—The following is an outline of a very successful practice:—Secure well rooted early runners; plant them two feet apart, in deep, rich, loamy soil, in an open part of the garden; constantly remove the runners, to strengthen the central crown or heart, which thus attains a large size, being fed by strong, healthy leaves. This crown, in the fruiting season, throws out many flower stems, which are vigorous, and bear numerous blossoms, which set freely, and ripen off a good crop of large fruit, which from being fully exposed to sun and air, acquire a superior flavour.

HEXANGULAR FLOWERED CAMELLIAS.—The Chinese possess Camellias of various colour, which produce hexangular-shaped blossoms; these varieties are highly prized by them. Every attempt, however, to introduce them to this country has hitherto been ineffectual; the plants always proving to be like our *imbricata*. Mr. Fortune, the collector of the Horticultural Society, when in China, again attempted it, and sent over several, one presented to him, the others purchased when in bloom; the former plant has bloomed, and proves, as before, to be like imbricata; none of the latter are likely to flower this season; but on an old plant of *imbricata*, growing in the garden of the Society, a bloom having the hexangular character in a decided manner has been produced. As the Chinese are so famous for stunting and starving their plants, does not this indicate that cultivation has something to do with the matter?

EPIPHYLLUMS.—These are the flat-stemmed Cactuses. To grow and flower them successfully, adopt the following method:—Cut away the least desirable of the old shoots, and if the plants are large, some of the weakest of the young ones also; this is to be done after flowering is past in the spring. They should then be repotted into a compost of free loam, with sharp gritty sand and small lumps of charcoal intermixed, and used in sufficient quantity to render the compost porous. Place them into a hothouse, or warm pit, where there is plenty of air, or else in a warm greenhouse, or a warm place at the window, and let them have air freely. Keep them all this time well watered, occasionally applying weak manure water. When the shoots have reached their full size, or nearly so, begin to reduce the quantity of water, and when the shoots feel firm, and have done growing, set them out in a hot place exposed to sun, but protected from wet. Plants thus ripened, will always flower well; they require to be kept moderately dry until they come into flower; and can be forced or retarded so as to produce their flowers in succession during winter, spring, and the early part of summer.

BLACK ITALIAN POPLAR.—This tree, (the *Populus monilifera*,) though not possessing any remarkable beauty in its habit, has yet the property of quickness of growth which renders it very desirable in some situations. For instance, in the neighbourhood of cities and manufacturing towns, where the mansions and gardens of wealthy proprietors are sometimes necessarily near to buildings, and other unsightly objects, such as mills, tall chimneys, &c., there is no tree which will so quickly grow up to form a screen as this kind of poplar. In good soil, where there is also a fair degree of moisture, it will produce shoots of five or six feet in length annually, and thus, in four or five years, will have reached from twenty to thirty feet in height. In this way it soon supplies shade and shelter to the suburban resident, and also concealment from the intrusive gaze of surrounding neighbours, or hiding or shutting out from view unsightly objects of whatever kind.

GRAFTING ROSES.—In grafting roses, which is best done before the shoots begin to grow in spring, the following is found to be a very successful plan:—Select the stocks of such dwarf roses as were budded the previous year, and in which the buds have failed, or, wanting these, take small well-rooted and established stocks of any free-growing kind, such as the common dog-rose, than which there is none superior for the purpose. Clear away the soil from the stem, so that the graft may be below the surface of the ground; and cut off the top of the stock, with a sloping clean cut, as low as will admit of the graft being so placed. Put on the grafts by a mode similar to common whip-grafting, but on the highest side of the stock; a second tongue is to be formed of the bark of the graft, with a very thin piece of wood, and this should be long enough to cover the sloping cut, and fit even with the bark on the lowest side. The scion is then to be tied on carefully, and, as is usual, the bark of stock and graft kept quite even on one side. Clay or grafting wax is then to be put securely round, and well closed at top and bottom, and the soil is then to be drawn again up to the plants, so as to cover the clay, leaving the top of the graft exposed. If in the open ground, they are now left to their fate, being merely kept clear of weeds; but if in pots, should be set into a cool frame, and duly watered. By this neat way of grafting much better plants are obtained than by the ordinary mode, as the second tongue takes firm hold of the top of the stock, and a clean and perfect union takes place. Grafting is not so desirable a mode of propagating roses as budding; but the plan here given is applicable to other plants, and is much the best way of grafting anything at all delicate.

CULTURE OF STOVE AND GREENHOUSE AQUATIC PLANTS.

How seldom do we meet with an aquarium, that is, a horticultural structure devoted principally, if not exclusively, to the growth of aquatic plants! And yet this cannot be because such plants are less beautiful than others, for they comprise some of nature's choicest subjects; neither can it be that there is any insuperable barrier as respects the facility with which they may be cultivated, for there are many plants of far more difficult culture brought to the very zenith of perfection. Probably the cause is, that an aquarium is too monotonous, too unmanageable; in other words, there may be too much difficulty in keeping up that variety and change which it is possible to secure with other classes of plants. However this may be, nothing can be more certain than this, that aquatic plants are not of difficult culture, whatever difficulty there may be in managing to keep up a continual succession of bloom from them alone.

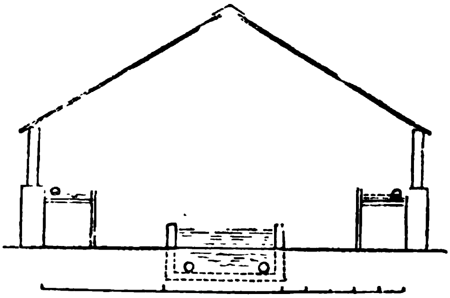
There are two ways in which aquatic plants are, and may be, grown. The one is in structures or houses, devoted to them solely, or, at least, chiefly. The other is to grow them in tubs, pans, or pots, proportioned to their size, and set in some appropriate structure according to the temperature they require. The latter plan is most generally adopted, because then a separate house is not required; and they are more readily put away during their dormant season. This plan, however, does nothing towards extending the culture of these plants, by endeavouring to overcome the supposed difficulties of exciting continued interest by them alone, inasmuch as the plants are just set to grow once a year according to their nature and habits, and they grow, and flower,—perhaps—and then sink again into their annual repose.

When the practice of growing them among other plants is adopted, they are planted in pans or tubs of suitable size, in proper soil, the vessels being supplied with water as may be necessary, and set either in the stove or greenhouse, according as the plants may individually require more or less of heat. The stove species, which mostly require the temperature of the water to be raised, should be placed over the flues, pipes, or other heating apparatus.

It will not be necessary further to enlarge on the culture under this head, as the notes which occur in a subsequent part of this article, in reference to each genus, will supply what other information may be requisite.

By far the most complete mode of culture is, however, to devote separate structures to this particular class of plants, perhaps including some that will bear the same general treatment. These structures may be of any size that may be determined as suitable to the extent of the collection of plants which it is intended to cultivate; and although, as just remarked, they may not necessarily be entirely occupied with water plants; yet, for the sake of maintaining the feature of a collection of aquatics, the latter should predominate. Thus, the side benches might be occupied with a variety of plants not strictly aquatic, but which grow in wet boggy places, and, consequently, would thrive in the moist atmosphere that would of necessity be kept up.

The annexed sketch represents a simple, though convenient, as well as appropriate, house for these plants. The centre should be occupied by a tank as large as the space would admit, to contain the larger growing plants; in fact, such a tank would take the bulk of the collection. It should be elevated about a foot above the floor, so that the water may be sufficiently under the eye to show the smaller plants to advantage, while the larger ones are brought nearer the level of the eye. The water in this tank should be kept at a temperature of from 70 to 80 degrees, by means of a hot water pipe passing through it, the higher temperature being most proper for the period of vigorous growth. The bottom of this tank should communicate with a drain, so that it might be partially or entirely emptied when necessary. A walk should pass entirely around this tank, of sufficient width to admit of ladies passing without inconveniencing their dresses; for very much of the enjoyment of flowers, as well as of other sights, depends on the comfort and facility with which they may be inspected; and no lady would care to pass round a narrow confined passage, where her dress would be liable to wipe the damp side-wall of the tank; this may appear a trifling thing to notice in this place, but it is certainly of more importance than at first sight seems to attach to it. The path may be of stone, slate, gravel, or it may be of lattice work; the latter is ever preferable, as it admits of keeping the floor quite moist, without having a wet surface to walk on; however, this may be regulated entirely by choice. The sides of the house, as well as the ends, should be occupied by stone benches, made so as to hold six or eight inches of water, also warmed by means of a pipe passing along them; in this water, the smaller and more delicate aquatic plants, being planted in pots or pans, should be set, either entirely immersed, or partially elevated, so as to suit their respective wants; and almost entirely elevated above its surface may be set the pans or pots containing such bog or swamp plants as may not require to be actually placed in the water, but which are benefited by being just so placed, as that their roots may obtain a constant supply of moisture by capillary attraction. These benches ought to be divided into compartments, so that some parts may, if requisite, be kept dry, to afford standing room for any plants which the atmospheric conditions of this house may be suitable for, but which do not require to be quite so bountifully supplied with moisture at the root. The atmospheric temperature of the house may be kept up by means of hot water pipes; what that temperature should be is only to be determined when the class of plants to be cultivated has been definitively settled; thus, if the stove



species, such as Nelumbium, are to be grown, a regular stove heat must be kept up during the growing season; 75 or 80 degrees will then not be too much for most of these plants, but this heat is not requisite while they are resting, any more than it would be with other stove plants. It is for this class of plants, too, that the warming of the water is particularly desirable. The ordinary greenhouse species require little artificial atmospheric heat, neither is it at all necessary that the water should be warmed for them. If, as most probably would be the case, a mixed general collection is to be grown, the extreme heat that would best suit the stove kinds, as well as the coolness proper for those of temperate climes, must alike give place to a mean temperature that will suffice to grow both to tolerable perfection; when such a collection is to be cultivated, a temperature of 70 degrees, as a maximum by natural or sun heat, and 60 degrees maximum by artificial or applied heat, will be enough; and this may be allowed to fall several—six or eight—degrees at night. The water, in this case, may be warmed to about 60 degrees during the growing period, and need not receive any artificial warming when the plants are at rest.

In the sketch which is here given, provision is made for accommodating a considerable number of the smaller growing species on the side benches. When, however, these are less cared for than the larger and more showy kinds, it would be more desirable to do away with the side benches, except, perhaps, at the ends of the house, and extend the tank in the centre, as far as practicable, on each side, the walk then passing close to the outside; if this plan is followed, the upright glass of the sides should, for the sake of effect, extend down to the level of the path; and this part of the house must also be a trifle more elevated in order to give head-room. If the side benches were done away, there would be abundant facility for growing any of the smaller kinds by suspending the pots in which their roots are planted, at a proper depth in the water, by means of metal hooks from the wall of the tank, so that there is no good reason why this arrangement should not, in all cases, be adopted, if preferred. The principal argument in favour of the side benches is this, that the water may be drained away, and the benches then used for other plants (not aquatics), for which the temperature of the house may happen to be suitable.

The great point in growing aquatic plants successfully—at least the stove species, which are the most remarkable—is the maintaining of a proper and regular warmth in the water in which they are placed. They are often placed in tanks or cisterns, from which water is taken for the various purposes of watering plants (probably in other houses), syringing, sprinkling, &c., and when this is the case, and the deficiency so caused is made good by adding large quantities of cold water, the roots are subjected to continual chills; and under these circumstances the plants never attain that perfection of which they are capable; many refuse even to grow so far as to produce flowers, but merely drag on a lingering puny existence. This, therefore, must be particularly avoided. A change of the body of water is indeed sometimes desirable, but this must be effected by supplying water less differing in temperature than ordinary cold water, from that which has been taken away; this may be done by procuring it from a reserve cistern placed within the influence of the warmth from the heating apparatus.

As water is the chief element supplied to these plants, it must be regarded as a matter of some importance from what source it is obtained. Rain water is best for all plants, aquatics included; and when this is not to be had, pond or river water is next to be preferred. Spring or well water is the very worst for horticultural purposes, unless previously to being used it is well aërated; that is, exposed in shallow vessels to the sun and air. But though rain water is desirable, it must not run from the roof of the house into the tank where the plants are growing, as in some cases—though not always—this would be a worse evil than the one previously referred to, of filling up with cold water. The evil in this case would be principally felt in the early spring months, when the rain is often "cold,"—sometimes mere melted snow—and the plants are making young growth.

The plants should all be placed in pots, or pans, or tubs, for the convenience of removing them, and altering their arrangement and position with facility, and also for the purpose of facilitating their removal out of the water when in a dormant state. The floating species often increase very rapidly, and soon spread over a larger space than would be properly devoted to them individually; when this is the case, the plants must be kept within proper limits, by cutting away such parts as may have extended too far. In doing this it is necessary to observe that the extreme points of the shoots of many kinds are the most vigorous parts, and the root-stock the weakest; and when this is the case, too much of the extreme parts of the plant ought not to be cut away, but some parts thinned out, leaving the others at full length, or nearly so; unless this is attended to, the strongest and best flowers, and the parts most likely to produce them, will be cut away, or perhaps the whole may be removed. So in the case of propagating those which require frequent renewal; the youngest parts are the most vigorous, and absorb all the strength of the plant, and if the old plants are pruned close back, trusting to the old root-stock to send forth fresh shoots and leaves, they generally grow but weakly, and sometimes will die away altogether. Some of the vigorous-rooting points of the shoots should, therefore, in these cases be placed in pots, and they will form good plants; this applies to providing plants at the end of one season, for blooming during the following one.

The details of the kind of treatment required by these plants will be best understood by describing rather minutely the most successful practice in cultivating some of the kinds; for example the *Nymphæas*, and *Nelumbium speciosum*. One mode of culture, practised by Mr. C. Duff at Eaton Hall, and described by him in the *Transactions of the Horticultural Society*, was as follows:—In December, when the leaves were decayed, the bulbs or tubers of *Nymphæa rubra* were taken out of the stone cisterns in which they had been growing for years, and were put into pots according to their size, the pots being plunged in water to within an inch of their rim; they remained in this situation in the pine stove till the plants began to show leaves in the April or May following; they were then planted in cisterns and in glazed earthenware pots, in which were the following soils; in the bottom four inches of strong clay made solid, above this six inches of light mellow loam, and at top an inch or two of sand to keep the water clean. The cisterns were of Yorkshire flags, and were of the following dimensions—three feet long, one foot eight inches broad, and one foot four inches deep; they were placed upon the end flues of the pine pits, where the fire entered and escaped, and they were elevated with bricks to within eight or twelve inches of the glass. The glazed pots were from fourteen to eighteen inches in breadth and depth, and were similarly placed, except a few that were plunged in the corners of the melon pits; they were kept constantly full of water, and it frequently was made to run over, in order that the water might be kept pure. The temperature of the pits was seldom under 80°, and in sunshine often above 100° Fahrenheit; no air was admitted at the lights immediately above the plants. As the plants increased in growth they put out many runners, which were pinched off close to the tubers; when the roots reached the clay the leaves got very strong, raising themselves on the sides of the cisterns. Under the same treatment *Nymphæa cærulea*, and *N. odorata* flowered freely, and *Nelumbium speciosum*, in a glazed pot, plunged in leaves in the same pit, flowered abundantly, and ripened seed.

The Nymphæas, with the exception of *N. stellata*, which is better treated like an annual, die down after flowering, and form bulbs or tubers in the soil; in the autumn these should be examined, the smaller ones removed, and the larger ones planted singly for flowering.

The *Nelumbium speciosum* was formerly very successfully grown by the late Mr. Kent of Clapton; his plan was to raise the plants annually from seeds—which, by the by, have been known to grow when kept for sixty years —and to grow them in large tubs, with a few inches depth of water over the surface of the mould, placed in the tan-bed of the stove. The seed should be sown in March or April; it is prepared for the operation by filing a small hole in the shell, at the end opposite the point; it is then to be put into a basin of water kept warm, and will have made a leaf in about ten days, when it may be removed to the situation where it is to flower. Some cultivators recommend the houses to be left open at night (the night temperature of hot-houses should always be kept cooler than by day) when the weather is not cold; and towards the middle of September to remove the plants to the open air, and allow them to stand there till the following spring. Another cultivator, the late Mr. Stewart of Valleyfield, adopted a very different course to that generally followed, with good success, which affords another proof of the fact which those familiar with the management of plants often have occasion to observe, namely, that the successful culture of plants is by no means constricted within the narrow limits of a single routine course of treatment; in other words, there is more than one successful way of growing most, if not all plants, provided certain principles are kept sight of. Mr. Stewart's plan was to grow them in a tub, plunged in the corner of a pine pit, in a temperature during summer from 65 to 90, or even 100 degrees, but in winter seldom above 60 degrees. During winter the plants received little water, the supply being gradually diminished from the time of flowering until they became almost dry, in which state they remained during winter; in spring, the amount of water was increased, and as soon as the foliage had grown above the surface, the old earth was carefully removed from the roots, and replaced with strong rich loam. After this the tub was kept nearly full of water, to allow the leaves to float, and was thus maintained until they had risen eighteen or twenty inches in height; the water was then reduced by allowing it gradually to escape through the staves of the tubs, the top hoop being purposely slackened, until it was lowered nearly to the surface of the mould. Fresh water was supplied every evening, and allowed thus to drain off during the growth and flowering of the plants;

and as the leaves and flowers died away gradually, so was the water reduced till the tub became nearly dry.

All the larger growing kinds require treatment similar to that here detailed of the Nymphæas and Nelumbium; but the true stove species are much more difficult to cultivate than those kinds which only require a greenhouse, chiefly in consequence of the degree of heat which it is essential should be kept up at the roots, while they are growing; this ought never to be below 70 degrees, and even 80 and 90 degrees may be given them with advantage; but this treatment must not be incessant, it is during their growing season only that they require this degree of heat; while they are dormant they should be kept much cooler, and nearly or quite dry. Sufficiently frequent changes of the water, to keep it sweet and pure, are essential to success. The smaller kinds require treatment similar to the larger ones, only adapted to their size.

Attempts have been made to grow some of the tender species in reservoirs of water in the open air, but warmed to a comfortable temperature for the roots; and in some instances this has been successful. There is no doubt, that all these plants would thrive very well in a structure where the water was kept at a tolerable degree of heat, and the atmosphere of an intermediate temperature. Where there are divisions in the cistern—as there should be—the water in some should be warmed for the more tender kinds, and others either much less heated, or not at all, to suit the hardier kinds. Under this arrangement, even some of the perfectly hardy ones might be introduced among the tender ones, so as to render a collection more perfect and complete, and the house better filled with this particular class of plants; and if the water in which they were placed were not heated, they would accommodate themselves to their situation, so as not to suffer injury from the increased temperature of the atmosphere. In one of the cases where tender aquatics have been successfully grown out of doors, in cisterns of heated water, the plants experimented on were *Nymphæa cærulea* and *Limnocharis Humboldtii;* some of the plants had their roots enveloped by a lump of clay, and were just thrown into the water; others were sunk in small baskets filled with clay; the reservoir being puddled with clay at the bottom, the roots in both cases soon reached it and established themselves; this was in May. For some weeks they did not grow at all, but by the middle of June the Limnocharis flowered, and the flowers continued to increase in number; by the middle of July one of the Nymphæas flowered; another plant scarcely made any progress: the weather was cold. Early in August the Limnocharis covered four or five square yards, and by the middle of September it had covered at least sixty yards, and had five hundred flowers open in one day; this number was actually counted. The flowers of the Nymphæa lasted several days, while in the stove they last but one. For two months after the plants were placed in the reservoirs, the heat of the water varied at the surface from 60 to 100 degrees, and sometimes appeared uncomfortably hot for the plants, (it should be explained that this water proceeded from the engine-house of a factory); but an alteration was made in the conducting troughs, and the water was cooled 15 or 20 degrees, and they then appeared to thrive better, and it was just after this that the Nymphæa first flowered. The Limnocharis continued to bloom till the end of October. "What a fine object would be presented by a large sheet of water adorned with the flowers of *Nymphæa cærulea*, *rubra*, *rosea*, *pubescens*, and *Lotus*. Who knows, too, but that the splendid *Nelumbium speciosum* and *luteum* would succeed under this treatment; while certainly the magnificent-leaved *Euryale ferox* would here find that room, which, although requisite to its perfection, it seldom meets with in our stoves." This latter remark still more forcibly applies to the *Victoria regia*.

LIST OF TENDER AQUATICS.

Actinocarpus minor (small) is a greenhouse perennial of small size, growing three or four inches high, and bearing pretty white star-like flowers, from May till August. It is a native of New South Wales, and belongs to the natural order Alismaceæ; it should be potted in sandy loam and peat, with the pot just immersed in shallow water; it is increased by seeds, or by division of the plant.

Alisma cordifolia (heart-leaved) is a stove perennial, growing about two feet high, and producing white flowers in July and August. A native of the West Indies; and belongs to the natural order Alismaceæ. It should be potted in sandy loam and peat, and set in shallow water; increased by seeds or by division of the plant.

Aponogeton.—There are four species, two of them reputed stove plants; they are bulbous rooted, small-growing perennials, and very curious and ornamental. The stove species are:—*A. monostachyon* (simple-spiked) has oval leaves, and a small cylindrical spike of pink flowers, six inches high, produced from August to October; a native of the East Indies. *A. crispum* (curled-leaved) a smaller species than the last, bearing white flowers from July to September; a native of Ceylon. The greenhouse kinds are:—*A. distachyon*, (two-spiked,) which has linear-oblong floating leaves, and produces its white, scented flowers from May to July; a native of the Cape of Good Hope: this will even flourish out of doors. *A. angustifolium*, (narrow-leaved,) which has linear-lanceolate erect leaves, and a two-forked spike of white flowers, blooming through the summer; a native of the Cape. These plants belong to the natural order Juncaginaceæ; they should be planted in lightish loamy soil and peat, either in tubs or largish pots, in about two feet depth of water. They are propagated by seeds or offsets.

Byblis liniflora (flax-flowered) is a very pretty greenhouse perennial, growing but a few inches high, with linear leaves beset with glandular hairs, and bearing blue flowers in May and June; a native of New Holland, and belongs to the natural order Droseraceæ. It does well in a light loamy soil, the pots half covered with water; it is propagated by seeds.

Cyperus.—This is a genus of sub-aquatic plants, of a reed or sedge-like habit; it contains both stove and greenhouse species, natives of various countries. They form the type of the natural order Cyperaceæ; their culture is simple, requiring loamy soil and moderately large pots, set a little under water: they are propagated by division.

Damasonium.—There are two species. *D. indicum* (Indian) is a herbaceous perennial of floating habit, with large broad heart-shaped leaves, growing erect out of the water, and having pretty white flowers of three broad petaloid segments, growing singly on stalks rising a foot out of the water; they appear from July to September; a native of the East Indies, and requires stove heat. *D. ovalifolium* (oval-leaved) succeeds in a greenhouse; it grows about the same height as the last, and produces white flowers in June and July; a native of New Holland. They belong to the natural order Hydrocharidaceæ. They should be grown in largish pots in loamy soil, and set a foot under water; they are propagated by seeds, or by division of the plant.

Ellebocarpus oleraceus (Water Fern).—This is a very elegant, large-growing stove fern, with fronds of delicate texture, attaining when well grown two feet high and upwards: there are no flowers, but some of the fronds bear abundance of seeds (spores); these fruitful fronds appear to be cut into narrower segments than the others, by the rolling under of their edges. It is a native of the East Indies, at Tranquebar; and belongs to the natural order Polypodiaceæ. It should be grown in a large pot of loamy soil, and set in shallow water; or, what answers the same end, the bottom hole of the pot may be closed up with a lump of clay, and the top of the soil kept below the rim of the pot, so that the surface may be kept just flooded. It is propagated by seeds, or viviparous shoots, or by division of the plant.

Elodea.—Two stove species. *E. guaianensis* (Guianan) is a small annual plant with white flowers in July; curious only. *E. pulchella* (pretty) is an East Indian species. They belong to the natural order Hydrocharidaceæ. A loamy soil suits them; and they are propagated by seeds.

Eriocaulon (Pipewort).—Two species. *E. fasciculatum* (fascicled) is a curious dwarf annual stove plant, bearing white flowers at the end of summer; a native of Guiana. *E. australe* (Australian) is a perennial plant growing a foot and a half high, flowering in June, and requiring a greenhouse. They are typical of the natural order Eriocaulaceæ. They grow in peat and chopped sphagnum, the pots placed about half-way in the water. The annual one propagated by seeds, the perennial, by division of the plant.

Euryale ferox (prickly) is a noble perennial stove plant, with roundish floating leaves, usually about one foot, but sometimes from two to three feet across; the petioles, and the flower stalks and calyces covered with stiff prickles; the flowers are red, produced from July to September. A native of the East Indies and China, and belongs to the natural order Nymphæaceæ. It should be grown in loam, or rich muddy soil, and placed in at least two feet of water, in which it must always be kept. It is propagated by seeds, sown in the water.

Herpestis.—Some of the species are pretty; the two following are the most desirable:—*H. Monnieria* (Monnier's) grows decumbent with wedge-shaped leaves, and bears small light blue flowers from July to September; it is a native of India, China, the Moluccas, throughout North and South America, the West Indies, and Sandwich Islands. *H. stricta* (upright) grows erect, and has cordate oval leaves, and pretty blue flowers in July and August; it is a native of Brazil and some of the West India Islands. They require a stove; and belong to the natural order Scrophulariaceæ. They should be grown in small pots of rich soil, and set in shallow water. They are propagated by seeds, or by division of the plant.

Heteranthera.—Two species. *H. reniformis* (kidney-shaped leaved) is a floating perennial with kidney-shaped leaves, and blue flowers in August; from South America. *H. acuta* (acute-leaved) has white flowers in June; native of Virginia. The former requires a stove, the latter a greenhouse. They belong to the natural order Pontederaceæ. They should be grown in pots of rich soil, and set in shallow water; propagated by division.

Hypoxis aquatica (aquatic) is a small perennial plant with yellow flowers : a native of the Cape of Good Hope. It belongs to the natural order Hypoxidaceæ. It should be potted in loam and peat, and set in shallow water.

Hydrocera.—Of this genus one species, *H. triflora* (three-flowered) should find a place in every collection of aquatics. It is an annual with piped floating stems, rising erect and branching, two feet above the surface, and furnished with linear lance-shaped leaves and pretty flowers, variegated with red, white, and yellow, and produced in July and August. It is a native of the East Indies, and belongs to the natural order Balsaminaceæ. It should be placed in a large pot or pan in rich loamy soil, and the pots immersed about six inches under water: increased by seeds, which should be sown in the spring.

Jussiæa.—There are nearly a dozen species of this extensive genus introduced, mostly stove plants, and several of them biennials, all bearing yellow, somewhat insignificant, flowers. Some are Indian, and some American ; they belong to the natural order Onagraceæ. They should be potted in rich soil, and set a moderate depth in the water. The biennials propagate by seeds, the perennials by cuttings.

Limnanthemum.—The species of Limnanthemums have been separated from the Villarsias. They are perennial plants, and have the flowers growing attached to the leaf stalks. *L. indicum* (Indian) has roundish-cordate leaves, and white fringed flowers, produced from May to August. It is a native of the East Indies, and requires a stove temperature. *L. geminatum* (twin pedicelled) has small roundish-cordate leaves, and bears bunches of yellow flowers in June and July ; it is the same as *Villarsia sarmentosa ;* native of New Holland. *L. lacunosum* (pitted) has roundish-cordate leaves, full of little pits on the under side, and bears white blossoms in June and July : this species is diœcious and polygamous ; a native of North America, in Canada, and Texas. They belong to the natural order Gentianaceæ. They are chiefly greenhouse plants, requiring large pots, rich soil, and deep water ; propagated by division or by seeds.

Limnocharis comprises two handsome species. *L. Humboldtii* (Humboldt's) is a stove perennial, with floating, roundish, ovate leaves, and large primrose-coloured flowers of three obtuse petals, standing one on each stalk just above the water, and produced freely all the summer ; a native of Buenos Ayres, and succeeds in a cool stove or greenhouse. *L. Plumieri* (Plumier's) has blunt oblong leaves, and bears umbels of pale yellow flowers throughout the summer and autumn ; it grows a foot and a half high, and is a native of Brazil. They belong to the natural order Butomaceæ. They require to be put in pots of moderately large size, in rich loamy soil, and set a foot or foot and a half under water : they rapidly cover the surface of the water. Propagated by runners, or by seeds.

Marica paludosa (marsh) is an upright stove perennial, growing about a foot high, with sword-shaped leaves, and producing pretty white flowers in July and August. A native of Guiana ; and belongs to the natural order Iridaceæ. It should be potted in peat and loam, and the pots half immersed : increased by division of the plant.

Nelumbium.—The species of Nelumbium are splendid stove herbaceous perennials, with the habit of the water-lilies. *N. speciosum* (Sacred Bean of Pythagoras) has large peltate leaves, some of which float on the water, and others rise up three feet above it ; the flowers are rose-coloured, smelling of anise ; they rise above the leaves, and are produced from June to August : there are varieties whose flowers are white, and of intermediate tints : one variety called *caspicum* is from the mouth of the river Volga, in Astracan, and has pink flowers ; another called *Tamara* (Tamara, native name), from Malabar, also has pink flowers : the species is a native of the East and West Indies, China, Japan, and other places. Both seeds and roots are esculent and wholesome. *N. luteum* (yellow flowered), from Carolina and other parts of North America, has yellow blossoms. *N. jamaicense* (Jamaica) has pale rose-coloured flowers, and is from Jamaica. *N. tibetianum* (Thibet) is recorded in *Loudon's Magazine* as having smaller, darker, and rounder flowers than those of *N. speciosum*, but otherwise resembles that plant. They belong to the natural order Nelumbiaceæ. They require to be grown in cisterns, or large pots or tubs, in rich loamy soil or mud ; to be kept dry in winter, and to have the depth of the water increased as they grow, so that when established they may have it from two to three feet deep ; they also require strong heat : propagated by seeds which should be sown in a temperature of 85 degrees, or by division.

Neptunia (Water Sensitive).—There are four species introduced. *N. natans* (floating) grows two feet high, with bipinnate leaves, and ovate spikes of yellow flowers, produced from July to September : it is an annual stove plant, native of the East Indies and Cochin-China. *N. plena* (double) grows two or three feet high, with bipinnate leaves, and oval spikes of yellow flowers from July to September ; it is believed to be a perennial, and is found in all parts of tropical America. *N. lacustris* (lake) is much smaller than the others, and has bipinnate leaves, and white flowers in July: it is from South America. *N. triquetris* (triangular) is from the East Indies, grows a foot high, and bears bipinnate leaves, and globose heads of white flowers in July. These all require stove heat, and belong to Mimoseæ, a tribe of the natural order Fabaceæ. They require loamy soil, a foot deep of water, and are propagated by seeds or cuttings.

Nymphæa (Water Lily).—Of these beautiful plants there are many species, all perennials, with large leaves floating on the water, and flowers just rising above the surface. *N. scutifolia* (shield-leaved) has peltate leaves, and intense blue flowers, produced from July to September; native of the Cape of Good Hope. *N. cærulea* (blue) has peltate leaves, and bright blue flowers, which are produced from June to September; native of the rivers of Lower Egypt. *N. stellata* (starry-flowered) has peltate leaves and blueish flowers, produced during the summer; native of Malabar, Coromandel, and Java. *N. cyanea* (Indian blue) has peltate leaves and blue flowers; it also flowers throughout the summer; native of the East Indies. *N. edulis* (eatable rooted) has oval-peltate leaves, and bears white flowers from June to September; native of the East Indies. *N. pubescens* (Indian Lotos) has reniform-peltate leaves, and produces white flowers from May to August; native of the East Indies, Ceylon, Java, and the western coast of Africa. *N. rubra* (red-flowered) has peltate leaves and rich red flowers, which are produced in July and August: there is a variety of this called *rosea*, which has pale rose-coloured flowers: both are East Indian. *N. dentata* (toothed-leaved) has peltate leaves and white flowers, produced in August; it is from Sierra Leone. *N. Lotus* (Egyptian Lotos) has cordate leaves, and produces pinkish flowers from June to September; native of Egypt. *N. thermalis* (thermal, or Hungarian Lotos) has peltate leaves and white flowers, which open from June to September; native of Hungary. *N. ampla* (ample-leaved) has peltate leaves, and white flowers from June to September; native of Jamaica. *N. versicolor* (various coloured) has peltate leaves, and bears white flowers, changing to pink, in August; native of the East Indies. *N. blanda* (charming) has cordate leaves, and bears white flowers through the summer; native of British Guiana. These plants are regarded as stove plants; they belong to the natural order Nymphæaceæ. They require similar treatment to the Nelumbiums.

Oryza sativa (Rice plant), is an erect plant, growing four or five feet high, with long narrow leaves, and an elegant panicle of inconspicuous flowers, followed by the heavy seeds. A native of the East Indies; and belongs to the natural order Graminaceæ. They should be sown in a pan or cistern of water, with a layer of loamy soil at the bottom: propagated by seeds. There are two other species.

Oxalis natans (floating Wood Sorrel), is a pretty dwarf perennial greenhouse plant, growing two or three inches high, with leaves consisting of three obcordate leaflets, and producing white flowers from September to December. A native of the Cape of Good Hope; and belongs to the natural order Oxalidaceæ. They may be grown in small pots filled with peaty soil, and immersed in shallow water; increased by division of the roots.

Papyrus Antiquorum (ancient), is a perennial plant, with erect stems, six to ten feet high, clothed at the bottom with hollow sword-shaped leaves, and bearing at the top a dense umbel of narrow leaves, remarkable for nothing but the manner in which they are produced; a native of Ethiopia and Egypt. The ancients made their paper from this plant. There are some other species:—*P. odoratus* (sweet-scented); *P. laxiflorus* (loose-flowered); and *P. elegans* (elegant). They belong to the natural order Cyperaceæ. They require good sized pots, rich loamy soil, and shallow water. Propagated by seeds or by division.

Pistia Stratiotes (water-soldier-like Pistia), is a stove perennial plant, with curious obcordate leaves, and bears white flowers towards the end of the summer. It is found in various localities, but chiefly in the East Indies; and belongs to the natural order Pistiaceæ. This plant floats on the water without soil: it is increased by pulling to pieces, every piece producing a plant.

Parkeria pteroides (Pteris-like Parkeria), is an aquatic fern. It is a native of Essequibo; and belongs to the natural order Polypodiaceæ. It should be potted in turfy loam and peat, the pots being only just immersed in water; propagated by division or by seeds.

Pontedera.—There are several species, all stove perennials. *P. crassipes* (thick petioled), has floating cordate-reniform leaves, the petioles or stalks of which are remarkably inflated when growing in the water, but not so when grown in ordinary soil; the flowers are blue, produced in spikes nearly a foot high, in September and October; a native of Guiana. *P. azurea* (fine blue), grows about the same size, and has blue flowers in July and August; native of Jamaica. *P. dilatata* (spreading), grows two feet high, has arrow-shaped leaves and umbels of blue flowers in May; a native of the East Indies. They are typical of the natural order Pontederaceæ. They grow when cast into water to float, but stronger in rich loamy soil, with the pots set in shallow water; propagated by division.

Sagittaria (Arrow-head).—There are several species. *S. lancifolia* (lance-leaved), grows a foot and a half high, and bears white flowers in June and July; a native of the West Indies. *S. sinensis* (Chinese), has trifid leaves, grows two feet high, and bears white flowers in September and November. *S. obtusifolia* (blunt-leaved), grows two feet high, and bears white flowers in July and August; native of China. These require a greenhouse. The following are considered as stove plants:—*S. acutifolia* (acute-leaved), grows a foot high, and bears white flowers in June and July; native of South America. *S. angustifolia* (narrow-leaved), grows a foot and a half high, and produces white flowers from June to August; native of Essequibo. They belong to the natural order Alismaceæ. They all grow in rich loamy soil, in large pots, set in shallow water; increased by division.

Thalia dealbata (mealy Thalia), though it will stand our winters, is yet properly at home in a greenhouse. It grows three feet high, with ovate leaves, and handsome blue flowers, in July and August; native of South Carolina. It belongs to the natural order Marantaceæ. It requires a large pot of loamy soil, set in shallow water; propagated by division.

Trapa (Water Caltrops).—Three species. *T. bicornis* (two-horned), is a perennial plant of floating habit, with deltoid leaves, and producing white blossoms from June to August. It is cultivated by the Chinese in marshes, and its nuts or seeds are used as food; in Japan they are used in broth. *T. quadrispinosa* (four-spined), is a perennial, bearing white flowers from June to August; native of Sylhet. *T. bispinosa* (two-spined), is an annual, with deltoid leaves, the stalks of which are bladdery, and bearing white flowers from June to August; native of the East Indies. They belong to the natural order Haloragaceæ. They require large pots or tubs, rich loamy soil, and a moderate depth of water; increased by seeds, which are eatable. The leaves, which grow under water, are cut into hair-shaped segments.

Victoria regia (Victoria Water-lily), is a magnificent stove perennial, with large floating leaves, from three to five or six feet in diameter, the edges turned up like a rim, three or four inches deep, red beneath; the flowers white, changing to pink, deep rose in the centre, double, and a foot or more in diameter; native of Guiana and neighbouring countries. The plant was raised in 1846, at Kew, but the young plants have since died; no doubt it will soon be again reared. It belongs to the natural order Nymphæaceæ. The treatment of Nelumbiums and Nymphæas will, no doubt, be proper for it: it will require much space.

Villarsia.—There are several aquatic and bog species, all perennials. *V. ovata* (ovate-leaved), has oval leaves, and fringed orange coloured flowers, produced in a raceme-like manner from May to July; native of bogs in the Cape of Good Hope. *V. parnassifolia* (Parnassia-leaved), has orbiculate leaves, and a loose branching stem, two feet, bearing yellow flowers from June to September: a variety of this, called *reniformis* (kidney-shaped), has kidney-shaped leaves, and a loose panicle of yellow flowers; both are natives of bogs in New Holland. They belong to the order Gentianaceæ. They require a greenhouse, and should be planted in pots of peat and cut sphagnum, and set in, but not covered with water; increased by division or by seeds.

MESEMBRYANTHEMUMS.

THE profusion of blossoms produced by this extensive family of plants, and the neatness of their growth, ought to render them greater favourites than they seem to be at present, especially as summer ornaments to our flower garden. They are much hardier than is generally supposed; and although, from their succulent nature, they will not stand frost, yet they may with success be planted out in the open air much sooner in the spring than they usually are. Mesembryanthemums that are intended for planting out in the flower garden, should be repotted in March, in soil composed of fresh loam and peat in equal quantities, with a sufficient portion of sand to prevent it becoming compact or caked. When they are potted the soil should not be pressed very tight, and sufficient space should be left for half an inch of fine gravel (from which all the sand has been thoroughly washed) to be placed on the top; this will keep the surface of the soil from becoming hard, and also keep it moist; for although these plants are impatient of wet, yet nothing is more detrimental to their vigorous growth than drought. After they are potted, they should be placed in a frame, and kept close and moderately warm till they have taken fresh root, when they should be gradually hardened that they may be ready to turn out by the end of April. In placing them in the open air, it is not essential that they be turned out of their pots. A warm sunny spot is proper for them; and it is best to cover the surface with stones. After they are turned out, they ought to have a slight framework of hoops placed over them, in order that they may be carefully protected from cold winds and heavy rain for some time, and especially at night. Thus treated, they will amply repay the trouble that has been taken with them, by producing a constant succession of their splendid blossoms till the frosts in autumn stop vegetation.

Those who have not got a stock of these plants should set about obtaining cuttings, which may be rooted without any difficulty if planted in sandy soil, and kept moderately dry in a frame, or under a handlight in the greenhouse. Young plants raised late in the spring will not of course be so capable of producing the effect during summer which stronger plants would do, but they will gain strength, and should be taken up carefully before they have sustained any injury from frost; potted in sandy loam, in pots as small as the roots will allow, and carefully set by for the winter, on a dry shelf in the greenhouse, where they must be kept dry, only just water enough being given to prevent them from shrivelling. In the spring they should be again repotted, and planted out as above.

BOTANICAL TERMS,

CHIEFLY APPLIED TO THE LEAVES OF PLANTS.

THE terms employed in reference to leaves are very numerous; some of these apply equally to other parts of the plants, and many of them will hereafter be noticed separately under the head of, "*Terms expressive of figure.*"

Acerose (*acerosus*) ; needle-shaped, linear, rigid, tapering to a fine point from a narrow base, as in the leaves of the common juniper bush.

Acinaciform (*asinaciformis*) ; scimitar-shaped ; that is, curved, fleshy, plane on the two sides, with the concave border thick, and the convex one thin.

Æqualivenium; equal veined ; that is, when the mid-rib of the leaf is perfectly formed, and the veins are all of equal size, as in ferns.

Alternate (*alternus*) ; where leaves do not rise from the same plane, but are placed alternately one above the other round the stems, they are said to be alternate, in distinction from the arrangement where they are placed opposite each other.

Amphigastria; a term applied to certain lobes or appendages attached to the base of the leaves of some *Jungermanniecæ.*

Anastomosing (*anastomozans*) ; the uniting of the vessels and veins. This is applied where the veins cross or touch each other, and unite where they come in contact.

Apex (*apice*) ; the extremity opposite the base ; applied to the point of a leaf.

Articulated (*articulatus*) ; jointed ; leaves are generally articulated with the stem, and the lamina is often articulated with the petiole. The articulation is manifest in compound leaves ; when they begin to fall to pieces, it will be observed that the parts separate, as it were, spontaneously, and without any fracture.

Ascidium; a singular dilation of the leaf-stalk in some plants, which forms what is called a pitcher, as in the pitcher plant (Nepenthes), the cephalotus, sarracenia, and some others.

Auriculate (*auriculatus*) ; having two small rounded lobes, or ear-like appendages, at the base of the lamina, as in the leaf of *Salvia officinalis.*

Avenium; veinless ; where there are no veins at all except perhaps the indication of a mid-rib, as in mosses, fuci, &c. These are not to be confounded with such as those which are very fleshy, and in which the veins are concealed.

Axil; the part where the base of the upper side of a leaf joins the stem.

Axillary (*axillaris*) ; arising from an axil ; issuing from between the stem and the base of a leaf-stalk, where it meets the stem.

Band-shaped (*fasciarius*) ; narrow, very long, with the edges parallel, as in the leaf of *Zostera marina.*

Base; the part of the leaf next the stem.

Biconjugate (*biconjugatus*) ; the same as *bigeminate.*

Bigeminate (*bigeminatus*) ; twice ; when each of two secondary leaf-stalks bears a pair of leaflets.

Bijugis; two pairs, applied to leaves ; by an alteration of the numeral at the beginning of the word it may be made to express any number of pairs.

Binate (*binatus*) ; growing two together on a common petiole, as in the leaves of *Zygophyllum Fabago.*

Blade; the lamina, or expanded surface of a leaf, as distinguished from the stalk.

Bourgeon; a term applied to *leaf-buds.*

Bourrelet; synonyme of *struma.*

Capreolus, clavicula; terms formerly applied to the *tendril.*

Cauline; applied to leaves proceeding from a stem.

Cephalodium; in lichens, a convex shield without an elevated rim.

Ceratophyllous (*ceratophyllum*) ; leaves shaped like the upper part of a stag's horn.

Cicatricule; the scar formed by the separation of a leaf from the stem.

Cirrhose (*cirrhosus*) ; tendrilled, having tendrils or cirrhi.

Cirrhus; a tendril, or thread-shaped process, issuing from the stem, by means of which plants with weak or climbing stems attach themselves to other plants or substances for support.

Collare; a term applied to the *ligule* of grasses.

Compound; when the blade of the leaf is articulated with the petiole, the leaf is said to be compound; that is, formed of separate parts, united into one common whole.

Conjugate (*conjugatus*); the same as *bifoliolate.*

Connate (*connatus*); applied when two opposite leaves grow together at the base, so as to surround the stem.

Cordate (*cordatus*); heart-shaped; having two rounded lobes at the base, resembling the heart in a pack of cards. It is exemplified in many leaves.

Cordiformis; same as *cordate.*

Cortex; the layers of parenchyma beneath the two surfaces of the leaf.

Costa; the mid-rib of a leaf; the vein which forms a continuation of the petiole and axis of the leaf, and from which the rest diverge.

Cotyledons; the seed lobes; the appendages of the embryo, accompanying the tender plantlet, and containing its first nutriment. In germination they either lie buried, as in the horse-chestnut, and are hence called *hypogæan,* or spring up above the soil, as in the radish, and are hence called *epigæan.*

Coussinet; a protuberance or gibbosity of cellular tissue, at the base of the petiole, where it joins the stem.

Crusta; in lichens, a brittle crustaceous thallus or leaf-like expansion.

Crypta; roundish cavities on the leaves of some plants, as the orange, which form receptacles of the peculiar secretions of the plants.

Cuneate (*cuneatus*); wedge-shaped, inversely triangular, with rounded angles, as in the leaf of *Saxifraga tridentata.*

Cuneiform; same as *cuneate.*

Curve-veined; where the veins of the leaf diverge from the mid-rib, through its whole length, and disappear in the margin.

Curvivenium; curve-veined.

Cyphellæ; pale tubercle-like spots on the under side of the thallus or frond of lichens.

Decurrent (*decurrens*); when the elongated bases of winged petioles adhere to the stem, and are prolonged below the point of insertion, as if running downwards, as in *Onopordum, Acanthium,* and many other thistles.

Deltoid (*deltoideus*); triangular, shaped like the Greek *delta,* Δ; it is applied to solid figures; the leaf of *mesembryanthemum deltoideum* is of this form.

Diachyma; the cellular tissue of the leaf; the parenchyma.

Diploe; the intermediate or interior cellular tissue of the leaf.

Divaricating; applied to veins, when spreading from the mid-rib towards the margin, at an angle between 60 and 80 degrees.

Diverging; applied to the veins of a leaf when spreading at an angle of from 40 to 50 degrees.

Eared; same as *auriculate.*

Ellipsoidal (*ellipsoideus*); formed like an ellipsis; that is, a solid body with an elliptic figure.

Ensiform (*ensiformis*); sword-shaped, strap-shaped, straight, with an acute point, as in the leaf of the iris.

Entire (*integer*); without toothing or marginal division of any sort.

Equal-veined (*æqualivenium*); when all the veins of the leaf are of equal size.

Equitant (*equitans*); a mode of arrangement in which the sides or edges overlap each other parallelly and entirely, without any involution, as in the leaves of the iris.

Falsely-ribbed (*pseudo-costatum*); when the veins of the leaf become confluent in a line parallel with the margin; this is the case in all myrtaceous plants.

Fasciarius; band-like. Not much used.

Feather-veined (*pennivenium*); when the veins of a reticulated leaf pass in straight lines from the mid-rib to the margin.

Foliation; same as *vernation.*

Frond; the leaf-like expansion of ferns, palms, &c., combining leaf and branch, and, in the case of ferns, bearing the fructification.

Gemma; a term applied to *leaf-buds.*

Gladiate (*gladiatus*); same as ensiform.

Hastate (*hastatus*); halberd-shaped; abruptly enlarged at the base, into two acute diverging lobes, as in the leaf of *Arum maculatum.*

Hidden-veined (*introvenium*); when the veins of the leaf are buried in an excess of cellular matter, as in various fleshy leaves.

Hypha; the filamentous fleshy watery thallus of *byssaceæ,* a group of plants closely allied to sea-weeds.

Hypophyllium; a term applied to the petiole when it has the form of a sheath, is destitute of blade, and surrounds the base of certain small branches having the appearance of leaves, as in the asparagus.

Hypophyllous; situated under the leaf.

Induviæ; the withered remains of inarticulated leaves, which decay on the stem.

Introvenium; hidden-veined; when the veins of the leaf are concealed by an excess of the cellular matter or parenchyma of the leaf.

Juga; a term applied to the pairs of leaflets in pinnated leaves, which usually grow in pairs; thus *unijugum* signifies a leaf with one pair of leaflets, *bijugum* with two pairs, and so on; *multijugum* means many pairs.

Laciniated (*laciniatus*); much cut or divided by deep taper-pointed incisions.

Lamina; the blade or expanded surface of the leaf.

Lanceolate (*lanceolatus*); narrowly elliptical, tapering to each end, as in the leaf of *Plantago lanceolata.*

Languette; a term applied to the *ligule.*

Leptophyllous; slender-leaved.

Ligulate (*ligulatus*); strap-shaped, that is, narrow, moderately long, and the edges parallel, as in the leaves of some species of amaryllis.

Ligule (*ligula*); a membranous process between the sheath and leaves in grasses.

Limbus; the same as *lamina.*

Linear (*linearis*); narrow, short, the edges parallel, as in the leaf of the yew tree.

Lorate (*loratus*); same as *ligulate.*

Lunate (*lunatus*); crescent-shaped, or having the figure of a half-moon, as in *Passiflora lunata: lunulate* has nearly the same meaning.

Lyrate (*lyratus*); shaped like a lyre, that is, obovate, with several lobes or sinuses on each side, gradually diminishing in size to the base, as in the leaf of *Geum urbanum.*

Lyriform; same as *lyrate.*

Margin; the edges of leaves are called the margins; their variation in this respect is very considerable.

Mesophyllum; the cellular tissue of the leaf; the parenchyma.

Multifid (*multifidus*); when a pinnated leaf is very much divided, in other words, when the segments into which a pinnated leaf is split, are very numerous.

Nerves; the strong ribs in leaves (where there are more than one passing from the base to the apex—which is called the midrib), are called nerves; the leaves of the common plaintain, or rib-grass, will illustrate this term.

Netted (*reticulatus*); when the veins of the leaf cross like lace-work, and project a little from the surface; this may be observed in the leaves of *Salix reticulata, melastoma,* &c.

Oblique (*obliquus*); applied to veins when they spread at an angle of between 90 and 120 degrees.

Oblong (*oblongus*); elliptic, but obtuse at both ends, as in the leaf of the hazel nut.

Ochrea; stipules surrounding or sheathing the stem, in the way of those of the *polygonum.*

Operculum; the lid of the pitcher, with which some leaves are furnished; the pitcher is supposed to be a modification of the petiole, and the operculum of the blade, as seen in the ordinary state of leaves.

Opposite; applied to leaves when placed in pairs, exactly opposite each other on the stem.

Orbicular (*orbicularis*); perfectly circular, that is, equal in length and breadth, with an even circular circumference, as in the leaf of *Cotyledon orbiculare:* precise examples of this form are rare.

Oval (*ovalis*); elliptic, but acute at both ends, as in *Cornus sanguinea.*

Ovate (*ovatus*); egg-shaped, elliptical, broadest at the lower end, so as to approach in figure the longitudinal section of an egg. Many leaves are of this figure, or present modifications of it.

Pagina; a term applied to the surface of a leaf.

Palmate (*palmatus*); resembling the human hand, that is, having several (five) lobes, the midribs of which meet at a common point, as in the common passion-flower.

Palmatifid (*palmatifidus*); a radiate-veined or palmate leaf, divided by deep fissures.

Panduriform (*panduriformis*); fiddle-shaped, obovate, with a deep recess or sinus on each side, below the middle, as in the leaf of *Rumex pulcher* and *Jatropha pandurifolia.*

Parabolical (*parabolicus*); between ovate and elliptical, with the apex obtuse, as in *Amaranthus Blitum.*

Pedate (*pedatus*); this differs from palmate, in having the two lateral segments themselves divided into smaller segments, as the leaf of *Arum dracunculus.*

Peltinervia; a term of the same signification as radiate-veined.

Pennivenium; feather-veined, when the veins of a reticulated leaf pass in direct lines from the midrib to the margin.

Penninervum; same as *pennivenium.*

Pericladium; applied to a sheathing petiole, when the lower part only is so, as in umbelliferous plants.

Perichætium; the calyx of mosses, or small imbricated scales or leaves which surround the stalk of the fruit.

Petiole; the foot-stalk which supports a leaf; some leaves are without a petiole, and are then said to be stalkless, or sessile.

Petiolate; attached to a stem by means of a petiole or stalk.

Petiolules; a term applied to the little stalklets supporting the leaflets in bipinnated and tripinnated leaves, &c.

Perfoliate (*perfoliatus*); when the lobes at the base of winged leaves cohere with the stem and unite round it, causing the leaf to appear as though pierced by the stem, as in *Beupleurum perfoliatum.*

Phyllodia; leaf-stalks, a good deal developed, and assuming the functions of leaves. Most of the so-called leaves of the greenhouse acacias are phyllodia: when the plants are very young they bear leaflets. Both their surfaces are alike, and they usually present their margins—not their surfaces, as is usual—to the earth and heavens.

Pileus; the cap, or umbrella-shaped organ that surmounts the stipes of an *agaricus,* or mushroom.

Pinnated (*pinnatus*); a form of leaf where several leaflets, or little leaves, are ranged along the petiole on each side. There are many kinds of pinnated leaves; thus there is equally-pinnate (*pari-pinnatus*), when the petiole is terminated abruptly, that is, without an odd leaflet; pinnate with an odd one (*impari-pinnatus*), when an odd leaflet or tendril terminates the petiole; alternately pinnate (*alternatum-pinnatus*), when the leaflets alternate; interruptedly pinnate (*interrupte-pinnatus*), when the leaflets are alternately large and small; decreasingly pinnate (*decrescente-pinnatus*), when the leaflets become smaller towards the apex; decursively pinnate (*decursive-pinnatus*), when the petiole is winged by the base of the leaflets, &c.

Pinnatifid (*pinnatifidus*); a divided feather-veined leaf, in which the lateral segments are divided almost down to the axis (in pinnate leaves each division forms a separate piece). There are several varieties of this form.

Pitcher; a curious modification of the petiole of some plants, capable of holding water, as in *nepenthes* and *sarracenia.*

Pseudo-costatum; falsely-ribbed, when the veins of the leaf become confluent in a line with the margin, as in myrtaceous plants.

Pulvinus; a swelling or protuberance at the base of the petiole on its lower surface, where it joins the stem.

Radical; applied to leaves when they spring direct from the root.

Radiating; applied to the ribs when several radiate from the base of a netted leaf to its circumference, as in most of the lobed leaves.

Ramastra; same as *stalklets* or *petiolules.*

Rectinervium; same as *rectivenium.*

Rectivenium; straight-veined, when the veins proceed from near the base of the midrib, and lie nearly parallel with it. The leaves of grasses, orchideous plants, palms, &c., are of this nature.

Reflexed; applied when the veins of the leaf spread at an angle beyond 120 degrees.

Reliquæ; the withered remains of inarticulated leaves, which decay on the stem.

Reniform (*reniformis*); kidney-shaped, that is, crescent-shaped, with the ends rounded, as in *Asarum europæum*, and various other plants.

Retroflexa; reflexed, bent backward.

Reticulated (*reticulatus*); netted-veined, that is, when the veins of the leaf cross in various directions, forming meshes like network.

Reticulum; the fibrous sheath at the base of the leaves of palms.

Rhomboid (*rhomboideus*); oval, a little angular in the middle, approaching to diamond-shaped, as in the leaves of *Chenopodium olidum.*

Rhombeus; a rhomboid, applied to the outline of leaves.

Ribbed (*costatum*); where three or more prominent ribs proceed from the base to the apex of the leaf, as in the plaintain.

Right-angled; applied when the veins spread at an angle between 80 and 90 degrees.

Rotund (*rotundus*); roundish, orbicular, a little inclined to oblong, as in *Lysimachia nummularia.*

Rotundate (*rotundatus, subrotundus*); roundish, same as *rotund.*

Roundish (*rotundus*); orbicular, inclined to oblong.

Runcinate (*runcinatus*); hooked back; curved in a direction from the apex towards the base, as seen in the leaf of the dandelion.

Sagittate (*sagittatus*); shaped like the head of an arrow, that is, gradually enlarged at the base, into two acute straight lobes, as in the leaf of *Rumex acetosella.*

Scabrities; a peculiar warty kind of roughness on the surface of the leaf.

Segments; the lobes of a leaf when divided to the midrib.

Sessile (*sessilus*); where a leaf is attached to the stem without a petiole or stalk, stalkless, as in *Zygophyllum sessilifolium.*

Sheathing (*vaginans*); when the petiole embraces the branch; this chiefly occurs in grasses.

Simple; when the blade of a leaf is not articulated or jointed with the petiole, but forms with it a continuous body. The term does not apply to the manner in which a leaf is cut or divided.

Spatulate (*spatulatus*); oblong, with the lower end much attenuated, as in the leaf of the common daisy.

Spreading; applied to the veins of the leaf when they spread at an angle of between 40 and 50 degrees.

Stipes; the petiole, or stalk of a frond.

Stipels; stipules situated at the base of the leaflets of some pinnated leaves.

Stipules; membranous, leathery, or spiny appendages of the stem, situated at the base of the petioles in many plants; they may be seen in the young shoots of willow trees.

Straight-veined (*rectivenium*); when the veins of the leaf are parallel, and arise from near the base of the midrib, as in grasses.

Struma; a swelling or protuberance, occurring in some leaves where the petiole and blade unite.

Subulate (*subulatus*); awl-shaped, linear, narrow, tapering to a very fine point from a broadish base, as seen in the common furze.

Tendril; a peculiar elongation of the petiole, enabling plants to lay hold of and support themselves upon objects which surround them.

Tergeminate (*tergeminatus*); a form of leaf, where each of two secondary petioles bears a pair of leaflets, and the common petiole bears a third pair of leaflets.

Ternate (*ternatus*); growing three together from the same point, as the leaflets of *Menyanthes trifoliata*, and some clematises.

Thallus; the leaf-like expansion of a lichen: it is the union of stem and leaf in these and some allied tribes of imperfect plants.

Trapeziform (*trapeziformis*); having the form of a trapezium; a figure with four straight sides, not parallel, and of unequal length, as in the leaf of *Populus nigra.*

Triangular (*triangularis*); having the figure of a triangle, as in the leaf of *Betula alba.*

Vagina; the sheath formed by the convolution of a flat petiole around the stem, as seen in the case of grasses.

Vasculum; a term applied to the fistular modification of the petiole of some plants, which is called a pitcher.

Veins; the ramifications of the petiole among the cellular matter of the leaf.

Veinless; applied to leaves which are without veins.

Veinlets; the smaller veins of the leaf.

Vernation; the manner in which young leaves are arranged in the leaf buds.

Verticillate (*verticillatus*); whorled; where several leaves are in opposition round a common axis, as in the phyllodia of *Acacia verticillata.*

Vernation; the manner of the distribution of the veins of a leaf.

Volva; a wrapper; the involucrum-like base of the stipes of a mushroom: this is originally a bag enveloping the whole plant, and is left at the foot of the stipes when the plant elongates and bursts through it.

Vrille; a French term for *tendril.*

Wavy (*undulatus*); having an uneven, alternately concave and convex margin, as in the leaf of the holly.

Winged (*alatus*); when the blade of the leaf is apparently continued down the petiole, so that the petiole has a foliaceous margin. Stems are sometimes *winged* in the same way.

Whorled (*verticillatus*); applied when several leaves are situated opposite on the stem, as in *Asperula odorata.*

NOTES ON FLOWERS AND FLOWERING PLANTS.

OBELISCARIA DRUMMONDII, *Graham* (Drummond's Obeliscaria). — Asteraceæ § Tubulifloræ - Senecionideæ. — A herbaceous perennial, growing two feet high, with many nearly simple (unbranched) stems, deeply lyrate-pinnatifid leaves, with from three to seven linear-oblong lobes; the flowers grow singly at the top of the very long stalks, and are large and strong; the florets of the ray (what would be called petals) are five, with a semiorbicular limb, and are bright yellow, the lower half stained with deep brown; in the centre the florets of the disk are collected into an ovate form. A native of North America. Introduced in 1836. Flowers in July and August. It is also known as *Rudbeckia Drummondii* (Paxton). *Culture.*—Hardy; grows in ordinary garden soil; propagated by division of the plant and by seeds.

STEPHANOTIS FLORIBUNDA, *A. Brogniart* (many-flowered Stephanotis).—Asclepiadaceæ § Stapeliæ.— A shrubby climbing plant of vigorous habit, with evergreen opposite ovate-elliptical, thick, smooth, shining, dark-green leaves, and umbels of large white fragrant flowers; the stalk of the umbels is inserted laterally between the stalks of the leaves; the flowers consist of a tube about an inch long, swollen at the base, and spreading at the apex into five oval segments, pure white, and deliciously fragrant. A native of Madagascar. Introduced in 1835. (?) Flowers in May, June, and July. *Culture.*—Requires a stove, and either a large pot and trellis, or to be planted against a pillar; peat and loam; propagated by cuttings.

BOMAREA ACUTIFOLIA, *Herbert* (sharp-leaved Bomarea). — Amaryllidaceæ § Alströmerieæ.—A tuberous-rooted herbaceous plant, (nearly evergreen in a greenhouse) with twining stems, twelve to twenty feet long, clothed with scattered lanceolate leaves, slightly hairy underneath and about half an inch wide, and terminated by a bunch of flowers, each about one inch long; the flowers are in six segments, tubular, the three inner segments orange-coloured, the outer ones red. A native of Mexico. Introduced in 1829. Flowers in August and September. Known also as *Alströmeria acutifolia* (Otto). *Culture.* — Hardy in a sheltered place, with slight protection in winter; sandy loam; propagates by seeds or division of the root.

CYPELLA HERBERTI, *Herbert* (Herbert's Cypella).—Iridaceæ.—A slender bulbous plant, growing about two feet high, with broadly linear-lanceolate plaited leaves, and a flexuose regularly two-forked flower-stem, bearing large showy orange-coloured flowers in a loose panicle; the flowers consist of six divisions, the three outer ones large, spreading, and undulated, the inner ones much smaller, and forming a double curve, so as to be very much recurvate at the apex. A native of Buenos Ayres. Introduced in 1823. Flowers in June and July. It also bears the names of *Tigridia Herberti* (Herbert) and *Moræa Herberti* (Lindley). *Culture.* —Requires a frame, or a *dry* position out doors, such as a south aspected border, well drained; peat and sandy loam; propagated by seeds or by offsets.

Crocus gargaricus, *Herbert* (Gargarian Crocus).—Iridaceæ.—A small bulbous plant, of three or four inches high, with small yellow flowers, which generally precede the leaves; they are pure yellow without any streaks. The species is botanically near the Cloth-of-gold crocus. A native of the Grecian mount Gargarus. Introduced in 1845. Flowers in March and April. It is the *C. aureus* (Clarke). *Culture.*—Hardy; common soil; propagated by offsets from the roots; seeds are liable to vary. (104)

Spiræa pubescens, *Bunge* (downy Spiræa). — Rosaceæ § Spiræidæ. — A small deciduous shrub, growing about two feet high, and in habit something like a weak *S. opulifolia.* It is a greyish-looking plant, with wrinkled leaves an inch and a half long, wedge-shaped at the base, and serrated towards the point; they are covered beneath with wool, which becomes cinnamon-coloured as it grows old: the flowers are small, white, and have a slight fragrance. They grow in little hemispherical umbels. A native of Chusan. Introduced in 1843. Flowers in March and April. *Culture.*—Nearly hardy; common soil; cuttings or layers. (105)

Henfreya scandens, *Lindley* (climbing Henfreya). — Acanthaceæ § Echmatacanthi-Ruellidæ. — A stout looking and handsome climbing plant, apparently not attaining a great height, with large, opposite, elliptic-pointed, subcoriaceous shining leaves, and racemes of large white sweet-scented flowers, which have a funnel-shaped tube, and two-lipped limb, the segments of which are, however, nearly equal. A native of Sierra Leone. Introduced in 1845. Flowers in March and April. *Culture.*—Requires a stove; peat and loam; propagated by cuttings placed in a hot-bed. (106)

Æchmea discolor, *Hooker* (two-coloured, or Crab's-eye Æchmea).—Bromeliaceæ.—A beautiful perennial plant, growing with a tuft of long narrowish leaves, in the way of the pine-apple; the leaves are green and obscurely marked with transverse bands on the upper side, purplish beneath. The flowers are produced in an erect narrow panicle, which grows two feet high; the unexpanded buds have a striking resemblance to the well-known beads, the seeds of *Abrus precatorius*, commonly called crabs' eyes; the panicle and flowers are of a rich coral red, the calyx being tipped with black. Probably a native of Brazil. Introduced in 1843. Flowers through the autumn and the whole of the winter months. *Culture.*—Requires a stove; sandy loam and peat; propagated from suckers or offshoots. (107)

Acriopsis densiflora, *Lindley* (dense-flowered Acriopsis).—Orchidaceæ § Vandeæ-Brassidæ.—A curious epiphytal plant, with oval pseudo-bulbs, and producing numerous flowered cylindrical racemes of blossoms about two inches long: the flowers are small, but delicately marked with brown upon yellowish green, with a rose-coloured lip bordered with white. A native of Borneo. Introduced in 1846. Flowers in March. *Culture.*—Requires a hot stove; turfy peat soil; propagated by dividing the plant. (108)

Cœlogyne speciosa, *Lindley* (showy Cœlogyne). — Orchidaceæ § Epidendreæ-Cœlogynidæ.—A dwarf epiphyte, with egg-shaped pseudo-bulbs, each bearing a large oblong, lance-shaped leaf, and throwing up the large solitary flowers from their base; the flowers are large but not very showy, from their dull colour, although they are freely produced; the sepals and petals are pale tawny, and the lip pitch-brown tipped with white. It is the *Chelonanthera speciosa* (Blume). A native of Java, on trees on Mount Salak. Introduced in 1845. Flowers from October to March. *Culture.*—Requires a stove; to be fixed on a block, or potted in turfy peat; propagated by division of the plant. (109)

Crocus boryanus, *Gay* (Bory St. Vincent's Crocus).—Iridaceæ.—A small bulbous plant, growing four or six inches high, with moderate sized white blossoms, stained at the base of the limb with orange colour; the anthers are milk white, and the stigma feathery, and very deep orange colour; the leaves grow up with the flowers. A native of the Ionian islands, Cyprus, and various parts of Greece. Introduced in 1845. Flowers in August and September. It is also called *C. ionicus* (Herbert), *C. veneris* (Tappeiner), and *C. caspius* (Fischer). *Culture.*—Hardy; common soil; offsets. (110)

Spiræa prunifolia, var. *flore-pleno* (double-flowered plum-leaved Spiræa).—Rosaceæ § Spiræidæ.—A deciduous shrub growing from six to eight or nine feet high, with long upright slender graceful branches, clothed with oval or ovate-elliptic leaves, which are toothed at the edges, and downy beneath, and bearing from every bud along the branches clusters of from three to six small white perfectly double flowers, like those of the double *Ranunculus aconitifolius*, that is, about half an inch in diameter; when in bloom the plants look as if covered with flakes of snow. A native of Corea, or the north of China. Introduced in 1846. Flowers in April. It is cultivated in the gardens of China and Japan. *Culture.*—Perfectly hardy; common soil; propagated by cuttings or layers; it will form an elegant shrub for forcing. (111)

Sarcochilus fusco-luteus, *Lindley* (tawny Flesh-lip).—Orchidaceæ § Vandeæ-Sarcanthidæ.—An epiphytal plant, with leathery leaves four inches long, and threequarters of an inch broad, arranged in two rows, and bearing its flowers in close conical spikes; the flowers are nearly three-quarters of an inch across in the principal diameter, and are bright yellow tipped with tawny colour. A native of Borneo. Introduced in 1846. Flowers in February and March. *Culture.*—Requires a hot moist stove; to be put in a basket or on a block; propagated by division of the plant. (112)

AQUILEGIA JUCUNDA, *Fischer, Meyer, &c.* (joyous Columbine).—Ranunculaceæ § Helleboreæ.—A fine perennial plant, nearly allied to *A. glandulosa.* Dr. Fischer says it stands intermediate between the true *A. glandulosa*, and *A. alpina.* The leaves are glaucous, twice-ternate; that is, twice divided into three, the alternate segments being roundish and deeply lobed and toothed. It grows about a foot high, and bears large and handsome blue and white blossoms, the sepals being ovate and deep blue, and the petals are roundish ovate and whitish, prolonged backwards into an incurved spur. A native of the mountains of Siberia. Introduced in 1845. Flowers from June to August. *Culture.*—Hardy; suitable for rockwork; sandy loam; seeds, or dividing the plants. (113)

CROCUS HADRIATICUS, var. *Saundersianus* (Saunders' Adriatic Crocus).—Iridaceæ.—A small bulbous plant, growing four or five inches high, and producing, with the leaves, large white flowers, the base of which is orange coloured, with brown streaks on the outside. A native of Albania, near Janina. Introduced in 1845. Flowers in the autumn and beginning of winter. *Culture.*—Hardy; common soil; offsets. (114)

PINUS WINCESTERIANA, *Gordon* (Marquis of Winchester's Pine).—Pinaceæ § Abieteæ.—A large growing evergreen tree, attaining from 60 to 80 feet in height, with a few stout irregular spreading branches, and triquetrous leaves, thickly set on the branches; the leaves are in fives, from twelve to fourteen inches long, with smooth persistent sheaths. The cones are pendulous, two or three together, from eight to ten inches long, much incurved, and tapering pretty regularly; large quantities of clear resin exude from among the scales, particularly on the upper side near their base. A native of Mexico, on the most elevated parts of the Cerro de San Juan, near Tepic. Introduced in 1846. *Culture.*—Probably hardy; sandy loam; propagated by seeds or herbaceous grafting. (115)

COLUMNEA AUREO-NITENS, *Hooker* (golden Columnea).—Gesneraceæ § Gesnereæ.—An erect, soft-wooded, suffruticose plant, everywhere of a golden hue, from the copious golden-coloured, silky, shaggy hairs, which are most abundant in the young parts: the leaves are opposite, but one is large—four to six inches long; the other small—scarcely an inch long—ovate-oblong, and deeply sawedged; the flowers are axillary and fascicled, tubular, about an inch and a half long, slightly curved, yellow, clothed with orange hairs. A native of Columbia. Introduced in 1846. Flowers sometimes in autumn, sometimes in spring. *Culture.*—Requires a stove; turfy loam and peat; propagated by cuttings, or by planting the leaves. (116)

ANGRÆCUM FUNALE, *Lindley* (cord-like Angræcum).—Orchidaceæ § Vandeæ-Sarcanthidæ.—A curious epiphytal plant without leaves, the short stem throwing out in all directions long, flexuous, cylindrical, greenish, fleshy roots, which are about as thick as goosequills; from the upper part of the stem a few large highly fragrant flowers are produced on short stalks, each bearing one or two flowers, with pale green, oblong-lanceolate, reflexed sepals and petals, and a large white lip. It has also been called *Epidendrum funale* (Swartz), and *Œceoclades funalis* (Lindley). A native of the mountains of Jamaica. Introduced in 1846. Flowers in the winter months. *Culture.*—Requires a stove; should be attached to a block of wood; propagated by division of the plant. (117)

CROCUS VALLICOLA, *Herbert* (vale Crocus).—Iridaceæ.—A small bulbous plant, growing four or five inches high, with large whitish or cream-coloured flowers, the segments of which are narrow and sharp pointed; they appear without the leaves. A native of the hollow elevated valleys near the summit of the Alps of Trebizond. Introduced in 1845. Flowers in September and October. *Culture.*—Hardy; common soil; offsets. (118)

AKEBIA QUINATA, *Decaisne* (five-leaved Akebia).—Lardizabalaceæ.—A slender twining evergreen shrub, furnished with deep green digitate leaves, having obovate or emarginate leaflets; the flowers grow in racemes, and are of a pinkish colour, each having three ovate sepals, and being without petals; they have an agreeable odour, which, however, partakes a little of the berberry smell; the flowers are of two kinds, the female ones being the largest. A native of Chusan, where it is found in the hedges. Introduced in 1845. Flowers in March and April. *Culture.*—Probably nearly hardy; loam and peat; cuttings or layers. (119)

ECHINOCACTUS WILLIAMSII, *Lemaire* (Mr. Williams' Echinocactus).—Cactaceæ § Echinocactidæ.—A small dwarf Cactus, often growing in a tufted manner, and sometimes proliferous. The individual offshoots or plants are turbinate, three or four inches high, and about half as much in diameter; the lower part is terete, ashy brown, scarred with close transverse lines; the summit is broadly convex, with a deep depression in the centre, glaucous, divided into six or eight ridges, which are more or less divided transversely into rounded unarmed tubercles, each having a small tuft of erect hairs, but no aculei or prickles. The flowers are small, of a light pink colour, growing from near the centre of the crown. A native of Mexico. Introduced in 1846. Flowers in the summer months. *Culture.*—Requires a greenhouse; well-drained sandy loam; kept moderately dry in winter; propagated by seeds, or by planting the offshoots. (120)

TIGRIDIA CONCHIFLORA, var. *Watkinsoni* (Watkinson's shell Tiger-flower).—Iridaceæ. —A bulbous-rooted plant, growing up a foot and upwards in height, with sword-shaped leaves, and large very showy blossoms, of a rich orange colour; the three outer segments of the flowers are orange-yellow, the inner segments deeply spotted with red and brown; they last but part of one day, but produce a good succession. A garden hybrid, raised about 1836. Flowers in July and August. *Culture.*—Half hardy; light rich sandy soil, and a warm situation; propagated by offsets, and by seeds. (121)

DENDROBIUM CHRYSOTOXUM, *Lindley* (gold-fringed Dendrobe).—Orchidaceæ § Malaxeæ-Dendrobidæ.—A beautiful epiphytal plant, with narrow club-shaped pseudo-bulbs, bearing from two to four oblong coriaceous leaves, and loose gracefully drooping lateral racemes of deep golden yellow blossoms; the sepals are oblong and obtuse, the petals of the same form but larger, and both a clear pale yellow; the lip is orange-yellow, most delicately and curiously broken up into innumerable minute fringed teeth. A native of India. Introduced in 1845. Flowers in March. *Culture.*—Requires a stove; turfy peat soil; propagated by division of the plant. (122)

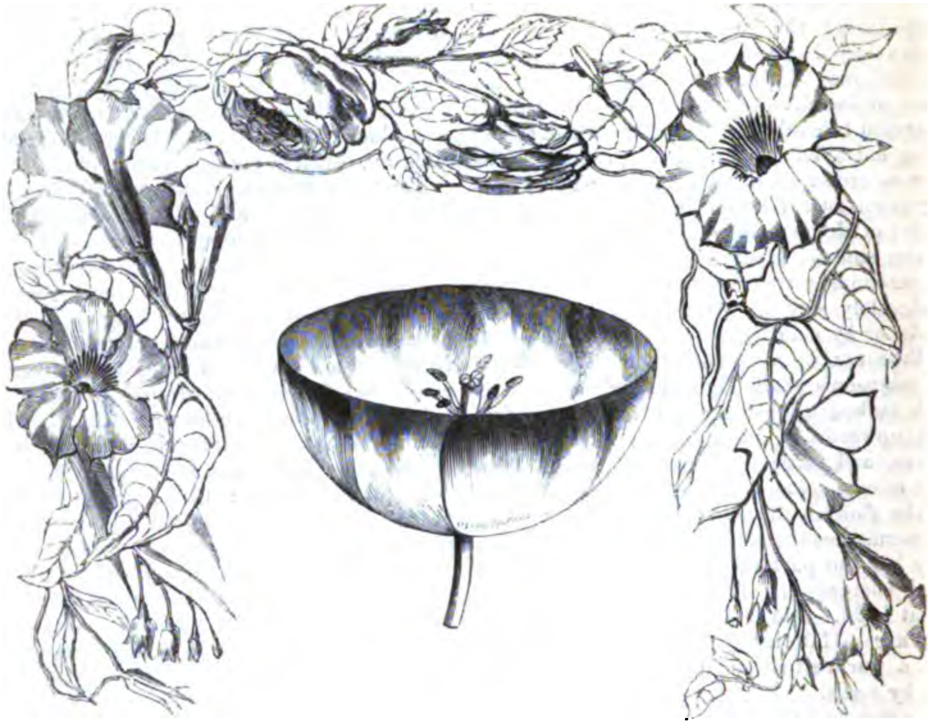
ODONTOGLOSSUM WARNERI, var. *purpuratum* (purple var. of Mr. Warner's Toothtongue).—A small epiphytal plant, with ovate pseudo-bulbs, bearing linear-lanceolate leaves at top, and throwing out from their base short racemes of from five to eight pretty blossoms; the sepals and petals are striped with purple on a white ground, the lip large, clear yellow, three lobed, the centre lobe being divided, thus forming four segments. A native of Mexico. Introduced in 1844. Flowers in January. *Culture.*—Requires a cool stove or greenhouse; turfy peat; propagated by division of the plant. (123)

CROCUS CANCELLATUS, var. *margaritaceus* (latticed Crocus, variety).—Iridaceæ.—A small bulbous plant of four or five inches high, with medium-sized white flowers, marked at the base with yellow and brown, and having a blueish tint inside; it is a handsome cup-shaped flower, growing up just before the leaves. A native of Mount Delphi, in Negropont, and Mount Taurus, varying in colour. Introduced in 1843 (?) Flowers in October. *Culture.*—Hardy; common soil; offsets. (124)

ERIOPSIS BILOBA, *Lindley* (two-lobed Eriopsis).—Orchidaceæ § Vandeæ-Maxillaridæ. —This is a handsome species, producing large plaited leaves, two or three together upon the summit of an oblong fleshy stem, from the base of which it throws up a long spike of gay orange-coloured blossoms; they are not very large, and are compactly formed, deep yellow, edged or tipped with deeper orange; the column is green. The history of its introduction is unknown, but it is probably some western species. Flowers in September. *Culture.* —Requires a stove; to be potted in turfy peat; propagated by division of the plant. (125)

ECHINOCACTUS VISNAGA, *Hooker* (the Visnaga).—Cactaceæ § Echinocactidæ.—This is a most remarkable plant. To the characters of the melon-shaped cacti, in it an enormous size is superadded. A specimen in the Royal Botanic Garden at Kew forms a solid mass of fleshy vegetable matter, measuring about four feet and a half from the base to the top, and having a circumference at a foot from the ground of upwards of ten feet: the number of the deep perpendicular angles or ribs into which its surface is divided is forty-four; the form of the plant is oblong-subcylindrical; at the top is a cushion-like tuft of down; the ribs are strongly armed with tufts of spines, which in America are used as toothpicks. A native of rocky places in the mountains of San Luis Potosi. Introduced in 1845. *Culture.*—Requires a greenhouse; sandy loam and brick rubbish, well drained; propagated by seeds or offshoots. (126)

STAPELIA CURTISII, *Rœmer* (Curtis's Stapelia).—Asclepiadaceæ § Stapeliæ.—A tufted-growing succulent under-shrub, with four-cornered articulated green branches, with small spreading teeth on the angles: the flowers, which are fetid, are produced from near the bottom of the branches, and are divided into five cordate sharp-pointed segments, with a raised ring in the centre; the flowers are wrinkled on the inside, of a bright yellow ground colour, spotted with small blotches of reddish brown. A native of the Cape of Good Hope. Introduced in 1787. Flowers in September. Also known as *Orbea Curtisii* (Haworth). *Culture.*—Requires a greenhouse; loam, sand, and brick rubbish; little water in winter; propagated by cuttings. (127)



GLENNY ON THE TULIP,

ITS CULTURE AND PROPERTIES.

According to our notions, there is not a more striking object in a well-kept garden than a choice collection of tulips, properly planted and protected. This flower, although by no means striking in the borders, and telling merely as a gaudy and hardy addition to the flowers of spring, is, when in collection, properly arranged, and growing under canvass, a very noble and imposing addition to any garden establishment. That the tulip is so hardy as to grow in any soil and situation, and through any kind of weather, is not to be denied; but the difference between the same variety exposed to hardships, and properly cultivated, is so great as to repay the most careful management, and will reward the cultivator for all the care he can bestow. The Dutch, for many years, surpassed us in the growth of this our favourite ornament of the parterre. The length of time which it takes to produce a blooming tulip from seed, even under the most favourable circumstances, for many years deterred the English growers from taking any pains to produce new varieties; and our neighbours having more industry, and, moreover, a soil and situation that were naturally adapted for their culture, took and kept the lead for many years.

We are not going, here, to give a long history of the tulip mania, and the enormous prices which particular varieties have been known to bring (and which was regardless altogether of the quality of the flower), because it does not afford the least instruction. It is sufficient to say, that tulips were bought and sold, like shares and stock, "per time;" and if a man had engaged to deliver, at the proper period, tulips which he found, to his cost perhaps, had all been bought up, he was obliged to offer enough to tempt somebody to part from them, or to make his buyer make up the account. The value of the tulip had, therefore, nothing to do with the price which had to be paid to make up the amount. Thus a man possesses himself of all he can buy of some flower not at all plentiful, and, having done this, he offers publicly to buy more; others, who want to gamble, and calculate that they can get plenty, agree to sell and deliver a certain number at the taking up. This is carried on till the buyer has got people engaged to deliver more than there are in existence, and this being the case, the price must go up until the buyer is satisfied. If he knows they are not to be got, he may become arbiter of the price at which he will settle, and they are all obliged to succumb to his terms. But in England we have had tolerable prices given for tulips, for their scarcity and quality combined. 100*l.* and 120*l.* are prices that have been paid within our own time; and for the last twenty years we have surpassed the Dutch in the quality of many new varieties.

The selection of a bed of tulips is a task of no ordinary difficulty; but a good deal of this arises from fashion. There are certain old flowers thought nothing of because they are old, but they are essential in a good bed. There are certain other flowers run after because they are more scarce and more dear, but are by no means so good. The young beginner is too often sacrificed in his first purchases; this is too bad, because there is no reason why a young cultivator should be served worse than an old one. There are plenty of good flowers cheap, or cheap flowers good, and he should at least have these. Nobody should try to get an extensive collection at first; it is better to form the bed of thirty-six sorts, and have plenty of each, than to extend the number of varieties for mere extension's sake. It is very well to exchange some for better after these have been grown some time; but a bed formed of about thirty-six kinds, all clean and fine, would be much more striking than some that are costly beyond description, because in tulips, as in anything else, the price is regulated by the scarcity or plentifulness, far more than by the quality. Polyphemus, which, when bloomed well, is the first bizarre in the world, is cheap because it has propagated rapidly, and there are such great quantities about. The properties of the tulip were never defined, so as to be understood, until the establishment of the Metropolitan Society, and the publication of the properties caused a vast alteration in the prices of some which had till then been in high regard. These properties are now well understood, and any striking fault so lowers the value, that what would have been esteemed a few years ago, would now be thrown away, or at least would bring but a low price, however new or scarce it might be. To all young beginners we would, therefore, say, buy cheap but clean flowers, and rather have twenty of a sort that is clean, than seek to diversify the collection by any that are dirty or foul. In this paper we propose to give such instruction to the young amateur as will enable him to make a show the first year, as fine as a more experienced grower; and that will encourage him to persevere.

SOIL AND SITUATION.

There is no soil so good for a bed of tulips as the top spit of a loamy pasture, with the turf rotted in it. Let the spit be taken off about six inches thick, and be laid in a heap to rot. A year is generally sufficient for the rotting, but so important is it that it should be freed from all sorts of vermin, that at the end of six months the heap ought to be chopped through, and the soil examined and thrown into another heap, and every living thing be taken out of it; this can only be done by repeated turnings. If time will permit to lay it by two seasons instead of one, the heap need not be disturbed the first year at all, but the more it is chopped about the second year the better. Grubs and wire-worms, which are the enemies of flowers and vegetables alike, are nearly always to be found in turves; and the rotting of the turf in the loam is, nevertheless, the best kind of manure or dressing for the tulip. But if this kind of soil cannot be had, and the loam can only be got pure, without any dressing at all, the best help to it is leaf mould; that is, leaves rotted into mould, about one-fourth part of which should be added. The loam should be what is commonly called hazel loam, that is, of a brown colour, and the quality, as to adhesiveness, such as will enable you to stir and bruise it easily; for when the loam is too adhesive, it is very inconvenient, because the rain runs it together, and when you attempt to stir the surface, it comes up in lumps which are not easily crumbled. Thus there is a great loss of time, and considerable danger of damaging the bulbs. Nevertheless, a tulip will grow moderately well in any kitchen garden soil, and if you cannot get what you want, be not afraid to use what you can. The situation should be protected against wind, if possible, as it saves much trouble, and prevents the necessity of covering them up close when wind prevails much; the bed is to be placed north and south or thereabouts, where it can be made to fall in with the garden plan; but, of course, it would not do to form it contrary to the length or the width of the ground. It should either be down or across the garden, whichever ranges best with the north and south, but we do not attach so much importance to this as some do.

FORMATION OF THE BED.

The space for the bed should have three feet of properly prepared compost. If the ground be low it is better to have two feet dug out, and one foot above the surface of the ground; if dry, two feet six or eight inches should be dug out, and five or six inches be above. The hole should be dug four feet wide, and if the garden be not well drained it ought to be, for nothing can do well long together if the ground be naturally wet. On the bottom may be put good rotten cow-dung rotted into mould, full two inches thick; on this put the soil you intend growing them in, to the full height you mean it to be, and let it settle down. When you plant, you will find the compost settled down full three inches, and this quantity has to be supplied after the bulbs are put in. Some persons, for neatness' sake, have a framework of wood to form the bed. In this case inch-and-quarter boards ought to be used, stakes being driven down at the outer edge of the space, so as to fasten the boards exactly to the dimensions intended for the bed, which should be four feet wide, and the length intended according to the number of rows. Fifty rows make a handsome bed twenty-five feet long; but they may be extended to any length. Amateurs have the fastened board three inches lower than the bed is intended to be finished off, and then have a three-inch board to go on, and fasten with pins and staples. The object of this will be seen in the directions for planting.

ARRANGING THE BED.

The proper way of arranging the varieties is to have the flowers opposite to each other, of the same sort; that is to say, the two outside ones alike; the two next to the outside should be alike, and those on each side the middle one should be of the same sort. Every row ought to be so, and by changing the middle flower, all the rows will be different. Tulips, as is known to growers, consist of Roses, Byblomens, and Bizarres; and the arrangement of these must be such as to place all the tallest in the centre, the next in height on each side the centre, shorter ones on each side these, and the shortest outside. The bulbs are planted in rows six inches apart, seven in the rows across the bed, and any number you please along them. Suppose the bed to be fifteen feet long, it will hold thirty in length; or if twenty-five feet long it will hold fifty in length. Taking the former, which every beginner could now compass very well, there would be required thirty middle row flowers—sixty of the first row, sixty of the second row, and sixty of the third row; because, as regards the height of the flowers, there are two outside rows called first rows, two of similar height next to them, and called second rows, and two of equal height next to the middle row, called third rows; thus :—

1	2	3	4	3	2	1
1	2	3	4	3	2	1

this would be the case to any length of the bed, if there were a hundred rows, the middle row being called indiscriminately fourth row, or middle row, or centre row. It used to be the fashion to keep to the heights only, but there were persons, who, besides attending to that particular, also took pains to prevent two roses, or two byblomens, or two bizarres, from coming together in the same row; and the old school of florists did this by beginning from one end of the bed with the rose, byblomen, bizarre; rose, byblomen, bizarre, and so on, by which, there being seven in a row, they all ran alternately thus :—

Rose	Byb.	Biz.	Rose	Byb.	Biz.	Rose
Byb.	Biz.	Rose	Byb.	Biz.	Rose	Byb.
Biz.	Rose	Byb.	Biz.	Rose	Byb.	Biz.

and so on; by which arrangement, there was certainly no two of a class came together in the same row, but the classes were not uniform in the bed. With some difficulty they were got out of their old prejudices sufficiently to make the arrangement uniform, and put the same classes on each side the middle row thus :—

Rose	Byb.	Biz.	Rose	Biz.	Byb.	Rose
Byb.	Biz.	Rose	Byb.	Rose	Biz.	Byb.
Biz.	Rose	Byb.	Biz.	Byb.	Rose	Biz.

Here we have the same class flowers at each side of the centre, and it greatly diversified the bed, and preserved a good deal of uniformity and brilliancy; but it was capable of still greater improvement. It was seen that flowers of the same class might be dark and light, bright and dull, large and small, and that the only way to have them really uniform, was to have the same identical varieties on each side of the centre, thus :—

Rose Lac	Reine de Shéba	Polyphemus	Rose Claudiana	Polyphemus	Reine de Shéba	Rose Lac

Here there was the same heights and colours, the same sizes, the same everything to make uniformity and continuity; this, through the bed, would secure an effect which could be produced no other way. It must be recollected that the young bulbs, although large enough to bloom, do not grow so tall as full-grown ones, so that flowers of any sort may be considered as applicable to two rows. Thus some are third and fourth row, others first and second row, which means that if small they will not come to their full height. Holme's King, Ambassador, Siam, Violet Alexander, Louis XVI. are third and fourth-row flowers, because the full-grown ones will grow tall enough for the centre, and moderate sized ones will be but in the third row.

PLANTING.

The bed being four feet wide, it allows of six inches' distance between the flowers, and six inches from the outside row to the edge of the bed. If there be no boarded edge, the earth must be levelled and brought to exactly three inches lower than it is intended to be when planted. If, however, there has been a boarded edge, with three inches of the board to take off and put on as may be wanted, the three-inch piece must be taken off, and the soil levelled to the edge of the boarded border. In both cases strike a tight line down the centre of the bed, and make a slight drill or mark. Then remove the line six inches on one side of the mark, and make another mark; then do the same six inches from the last, and again six inches from this; you will then have four drills, which complete one side of the centre; do the same on the other side, and the seven rows will be marked. Get a straight piece of wood, and by the help of another person begin by measuring six inches from the end as a guide for each, and press the wood gently into the soil at the exact distance, and by removing each end six inches, and pressing it into the soil only just enough to make a mark, you will complete the marking of the bed. It, however, saves a good deal of time and trouble, if, when the wooden edging is made, the place for the rows be notched or painted on the edge of the boarding; the lines are then sure to be right, and the operation is quicker as well as more accurate. The marks being made, the tulips—which should be arranged in boxes, whose partitions represent the places where the bulbs are to go—are to be planted. These boxes have seven partitions the narrowest way, and an indefinite number the longest way, because it matters not how many of such boxes or drawers are used. The convenient size is about ten in length, as larger than that is inconvenient; three of these would do for a bed of thirty rows, and they should be numbered in front from 1 to 30; and each of the numbers represents seven to cross the bed. In the book there must be a corresponding record, something like the following:—

FIRST ROW.

No. 1.	Ceres blanche,	Rose
2.	Rubens,	Byblomen
3.	Polyphemus,	Bizarre
4.	Comte di Verginnes,	Rose
5.	Polyphemus,	Bizarre
6.	Rubens,	Byblomen
7.	Ceres blanche,	Rose.

SECOND ROW.

No. 1.	Bienfait,	Byblomen
2.	Strong's King,	Bizarre
3.	Rosa blanca,	Rose
4.	Ambassador d'Hollande,	Byblomen
5.	Rosa blanca,	Rose
6.	Strong's King,	Bizarre
7.	Bienfait,	Byblomen.

THIRD ROW.

No. 1.	Globe,	Bizarre
2.	Madame Vestris,	Rose
3.	Siam,	Byblomen
4.	Duke of Clarence,	Bizarre
5.	Siam,	Byblomen
6.	Madame Vestris	Rose
7.	Globe,	Bizarre.

In this way would be recorded the contents of all the rows up to thirty, or any larger number: it is only necessary to increase the number of boxes or drawers. The bed being ready, and marked for the bulbs, the planter and assistant should be one on each side the bed. The principal should have the boxes on his side, and having planted, or rather placed (for the bulb is only to be gently pressed into the soil where the lines cross each other) the first, second, third, and fourth himself, he should hand the fifth, sixth, and seventh to his assistant; and so they go down the bed to the last row. If the bed be boarded, put on the three-inch top all round, and fill up with the compost, even with the top of the additional board, which forms the best guide: if the soil is put on a little round, it is none the worse for it, as it shoots the water to the sides in a heavy fall of wet; and while the side bulbs are by the slight rise left about three inches below the surface, the stronger ones towards the centre are somewhat deeper, which is none the worse for these. If there is no boarding, and no three-inch border to guide, place a few pegs here and there, just three inches above the surface on the side, and four inches above the surface in the middle, as guides in putting on the soil. The best way is to sift it on through a coarse sieve, but it may be done with a spade, care being taken that the bulbs are not disturbed by the process. It has been the practice of some, and we have frequently done it ourselves, to put a cone of silver sand over every bulb. It is of no use except at taking up time, when it is a sort of guide to the spot where a bulb ought to be found, which in cases where they may partly fail, and only leave an offset, may be of use; but as careful persons will take up their bulbs before the stems have rotted down, or at least shrivelled more than half way down, it is only good for a mark. The tulip is no better in sand than in any other clean compost. When the surface is adjusted, and the bulbs are covered three inches, and the middle ones to four inches, the bed may be left.

MANAGEMENT AFTERWARDS TILL BLOOM.

The tulip is so hardy, that many persons leave the bed without any kind of protection till the plants are up; but in severe frosts, although the plant may not suffer, the embryo flower may, and often does: the effects are blights, split petals, deeply notched edges, discolorations, and occasionally damage to the bulb itself. Some varieties are very susceptible of damage, though not easily killed. To make sure of a fine bloom, frost ought not to reach the bulb; and the more the growth is advanced, the more mischievous does the effect prove. If we therefore desired to be free from the chance of a bad bloom, we should exclude the frost from the moment of planting, by covering the bed with fern, or loose litter of any kind, whenever there was a chance of frost; but beware of protecting from frost in the beginning, and omitting it when they are forward. When the plants are above ground, the surface of the soil should be stirred all over, all the lumps bruised, and the earth laid close round the stems; and if there has been no covering previously, it should be carefully applied now. The ordinary practice is to cover the bed over with bent hoops or irons made on purpose, and cloths or mats thrown over them, in proportion to the severity of the weather, will be found generally effective; when the hoops or irons are placed across the bed, long slips of wood should be lashed along the top or roof portion, and a coarse net should be stretched all over it, and fastened down all round. It keeps the cats off, and prevents birds from disturbing the surface; and, besides this, it enables us to throw the mats or cloths over without falling into hollows which would hold the wet, or make it run through in parts, and drip on the plants. These measures are also necessary to prevent hail and violent rains from doing injury to the brittle leaves. Very mild showers do good instead of harm; and it is impossible to give too much air, therefore, the bed ought not to be covered an hour unnecessarily, while it is equally important to cover against frost, hail, or heavy showers. This treatment applies up to the very period of blooming.

THE STAGE AND TOP CLOTH.

When the bloom buds have grown up a few inches, and the striped colours are indicated, if there be a proper stage erected, the top cloth should be put on. This should roll up and down the roof on both sides, and be contrived so that the two lines are both at one end, and that the nearest to the entrance to the garden, or the part in which there is most likely to be some one in attendance, or at work. Very sudden hailstorms prevail at this season, and the smallest hailstorm that touches the bud, will cause a mark or blight on the spot it strikes; on the least appearance of a coming squall, therefore, the cloths should be let down, till it is passed over; but it is of the utmost importance that the bed should be as much as possible uncovered. When the side cloths are placed, the hoops and net work should be removed altogether; and when the colours are showing strong, the sun should be kept off, not by lowering the cloths of the roof altogether, but by carefully lowering every hour just so much of the cloth on the sunny side, as will shade the bed, and no more. It will be found that, by constant watching, not more than one half the bed need be covered at all at one time, and the object of covering as little as possible is, to prevent the stems from being drawn up weakly. The growers of the present day are so anxious to prevent the drawing of the plants, that they rarely cover enough in the early part of the growth, and the result is, that perfect blooms fit for exhibition are scarce, even in the best beds. The older growers used to go to the other extreme, and it was a common thing to see a cord stretched down each row to support them, as they frequently could not support themselves. It is, however, quite possible to cover from bad weather without drawing them, if sufficient care be taken that they are not covered unnecessarily. Where there is no proper house and covering, the hoops or irons, nets, and covering that did for the early protection, must be continued for the late covering, for the bloom is soon gone, unless protected from the sun, rain, and wind.

TREATMENT AFTER BLOOM.

The covering must be removed as soon as the bloom declines, and the bed must have all the sun and air until the leaves and stems die down; but as weeds will rapidly grow, they must be kept under by hand pulling while they are young; the roots of weeds do great mischief to the bulbs, and therefore must not be allowed to get a-head.

TAKING UP OF THE BULBS.

In taking up the bulbs, the boxes from which they were planted must be placed as they were at planting time; and by rights two persons should be engaged in the process, beginning at number one in the first row; the operator should be careful to put the trowel down sufficiently close to bring up the bulb, but not near enough to injure it. He should throw out the earth, and make a sort of trench next the wood-work or end of the bed, not too close to the tulips, and by thrusting the trowel down between the first and second row, and turning out the bulbs one at a time, he may replace all the stock in the partitions or holes they came out of. With a sharp knife he ought to cut off the stems within half an inch of the bulbs, and put the bulbs, with the dirt hanging about them, into the drawers; as the drawers are filled they should be placed in the shade, because they require drying before they are cleaned, and when thoroughly dried they may be cleaned of their superfluous skins, and put away in a dry and airy place. There is, in fact, as will be seen by this practice, no difficulty whatever in growing tulips.

TULIPS FROM SEED.

The seeds of tulips should be saved from thick-petaled, well-shaped, and bright flowers only; although some take pains to cross them with this, that, and the other variety, or believe the only proper way to raise good flowers is to grow no bad ones. The seed should be sown in boxes or pans, or large pots—we prefer the latter—any time between October and February, and be placed under a frame and glass; or if there be sufficient, a frame may be filled up or prepared on purpose. Place the frame on the ground, fill it within three inches of the top edge with well-sifted compost, such as is recommended for beds, and in the same sloping direction as the glass, or top edge of the frame; sow thinly all over the surface; sift over the seeds to the thickness of a quarter of an inch; cover from frost and heavy falls, but in fine weather let them have all the air, and a mild shower whenever it comes. Here they may remain with no other care than watering and weeding, until the leaves die down, when the small bulbs, not larger than peas, must be very carefully taken up, and when all have been taken that can be obtained in the ordinary way, the top three inches should be sifted in a fine sieve, when others, not seen at first, will be found among the small lumps and stones left in the sieve. These, after being out a month or so, may be planted in a bed made up for the purpose; put them in drills not more than two inches apart in the row, and the rows may be three, four, or six inches apart, for the sake of the more easily keeping the bed clear of weeds; they should be planted at the depth of two inches. The following year they may be planted three inches apart in the row, and the year after four inches. To grow seedlings profusely, they ought, from the very first year, to be kept in separate bags, with their offsets, for some will be found with such the very first season after the seed year, and we have often taken up two little bulbs, one below the other, the very year they were sown. About the fifth, sixth, and seventh years, some of them will begin to bloom, most of a self colour; they may now be ticketed as breeder tulips, and now the use of keeping them all separate with their increase will be seen. As they bloom, if they have thin petals, or foul bottoms, or are of a bad shape, throw away not only the blooming roots, but all the offsets also. If they have not been kept separate, all the offsets of the worthless varieties will be among the stock, and continue plaguing the grower for years; while, on the other hand, if a variety prove of fine form, of thick petal, smooth edge, and clear ground colour, the whole stock may be as carefully preserved as the bad ones are excluded. When a flower breaks from the self or breeder colour into stripes, it will be seen whether the stock be valuable or not.

We have now simply to give a calendrical remembrancer for each month.

January. The bulbs are now in the ground, and in most seasons not showing above, but they are shooting in the ground, and if we are right in our conclusions, a frost ought not to reach any that are destined for a fine bloom; cover therefore carefully against frost. Sow seed.

February. Many of the earliest, in a fine open season, will be up in the course of this month, and require protection; cover therefore carefully on any appearance or likelihood of frost. Seed may still be sown, though it is better done earlier.

March. Stir the earth all over the surface of the bed; bruise the lumps, and place the mould close to the stems of the plants. Cover more carefully than ever as the plants advance. Seedlings must also be protected, and if in exposed beds, let some good litter be placed upon the beds, as it is a great protection if loose and dry; pea haulm, fern leaves, or clean straw are useful. The earth should be stirred also in all the outbeds, and the weeds carefully removed.

April. Watchfulness as to covering against bad weather and frost, is now more necessary than last month. If seed is up the sun must be kept off, and watering may be necessary, as whether they be under a frame, or in pots under glass, they are deprived of showers; mild showers may be allowed to refresh all the beds, and coverings should be removed for that purpose; but if there be the least indication of frost, the covering must be very effective. Towards the end of the month the top cloth should be put in its place, ready for the double use of keeping off sun and heavy falls.

May. This is the blooming month; the sun must be constantly prevented from shining on them, all the heat of the day, from the moment they begin to show their colours well, and before they open. The whole of the blooms should be examined by the book, and observations should be written against each; not only a general mark as to correctness, but also as to the exact quality, whether good, or fine, or very fine, and any remarks that may strike the grower as worth noting—such as a flower being tall enough for the middle row when it is in the second row, or any flower being too short for its place; these remarks enable a person to make proper alterations before next planting time. Examine also seedlings and breeder tulips, that you may throw away those good for nothing, and keep others that are promising. Keep all clear from weeds.

June. The flowers go off this month, and towards the end of it you may begin taking up bulbs, especially in the outer beds. The rule for this must be the state of the foliage, which ought to have turned yellow, and begun to shrivel, before any of the valuable sorts are disturbed. Seedlings of a small size must be also taken up as soon as the leaves are dead.

JULY. Finish taking up the bulbs, and let the boxes be set in the shade, to harden and dry the bulbs; have the mould of all the beds sifted, to collect any bulbs or offsets that might have escaped. Any very small offsets of valuable sorts may be re-planted at once in pots, as they will often shrivel before planting time.

AUGUST. Clean all the bulbs of their dirt and skins, and also of the bits of stem left on them at taking up, and put the drawers away in a cool dry place. The smallest seedlings, and also the unripe offsets that are worth the trouble, should be planted again at once; throw out the compost from the beds, and chop it about occasionally, to see there are neither grubs nor wire-worms among it, for both are enemies to the tulip.

SEPTEMBER. Begin to arrange your beds, removing those which are too short or tall, or wrong sorts, or not appropriate, into places better adapted for them; all these alterations must be made in the boxes, and carefully noted in the book for the next season. Turn over the compost of the beds.

OCTOBER. Plant offsets so as to get them out of the way before the general planting time comes; the seedlings and breeders may also be all planted this month, leaving nothing till next month, but the principal beds. Return all the compost to the best bed, and if it be the same the tulips grew in last season, put some rotten cow-dung, about two feet from the surface, full two inches thick all over the bottom.

NOVEMBER. Plant the rest of the stock, the best bed as well as others; sow seed, and keep offset beds clear of weeds. The whole of the bulbs ought to be planted early in the month.

DECEMBER. Sow seed, keep all beds clear of weeds, and if any bulbs be left out of the ground, lose not an hour in planting them.

GENERAL REMARKS.

The necessity of planting as early as directed, if the weather permit, may be appreciated on consideration of the fact that the weather often causes all operations to be suspended for a month or six weeks. We have, ourselves, been unable to do it at the proper moment, and although we could have done it a fortnight later, had the weather served us, we have been thrown out (and we remember one year in particular) until the 11th of January. The bulbs always suffer from the time they begin to shoot until they are in the ground; the cultivator who will pay common attention to these simple rules, however unimportant some may seem, will find his reward in a good bloom and healthy bulbs.

PROPERTIES OF THE TULIP.

First.—The cup should form when quite expanded from half to a third of a hollow ball. To do this, the petals must be six in number; broad at the ends, smooth at the edges, and the divisions between the petals scarcely to show an indenture. (*See illustration.*)

Second.—The three inner petals should set close to the three outer ones, and the whole should be broad enough to allow of the fullest expansion without quartering (as it is called), that is, exhibiting any vacancy between the petals.

Third.—The petals should be thick, smooth, and stiff, and keep their form well.

Fourth.—The ground should be clear and distinct, whether white or yellow. The least stain, even at the lower end of the petal, would render a tulip comparatively valueless.

Fifth.—Roses, byblomens, and bizarres, are the three classes into which tulips are now divided. The first have a white ground, and crimson, or pink, or scarlet marks; the second have white grounds, and purple, lilac, or black marks; and the last have yellow grounds, with any coloured marks.

Sixth.—Whatever be the disposition of colours or marks upon a tulip, all the six petals should be marked alike, and be therefore perfectly uniform.

Seventh.—The feathered flowers should have an even, close feathering all round, and whether narrow or wide, light or heavy, should reach far enough round the petals to form, when they are expanded, an unbroken edging all round.

Eighth.—If the flower have any marking besides the feathering at the edge, it should be a beam, or bold mark down the centre, but not to reach the bottom, or near the bottom of the cup; the mark or beam must be similar in all the six petals.

Ninth.—Flowers not feathered, and with flame only, must have no marks on the edges of the flower. None of the colour must break through to the edge. The colour may be disposed in any form so that it be perfectly uniform in all the petals, and does not go too near the bottom.

Tenth.—The colour, whatever it be, must be dense and decided. Whether it be delicate and light, or bright, or dark, it must be distinct in its outline, and not shaded, or flushed, or broken.

Eleventh.—The height should be eighteen to thirty-six inches; the former is right for the outside row in a bed, and the latter is right for the highest row.

Twelfth.—The purity of the white, and the brightness of the yellow, should be permanent, that is to say, should stand until the petals actually fall.

THE HYACINTH.

GLENNY ON THE HYACINTH.

THE soil in which the Hyacinth is so successfully grown in Holland is, doubtless, the alluvial soil of the place, but much is done by dressing it. Naturally a grey, sandy and not very rich earth, it requires then twice its bulk of manure, which is three-fourths cow dung, and one-fourth vegetable mould. In England the nearest we can get to perfection in the way of compost is rotted turves, not cut more than three inches thick originally, and allowed to lay in heaps till the vegetable parts have become mould; this should be rubbed through a coarse sieve that would let a marble through, and as it falls through on the heap some one ought to be on the watch to detect the wire-worm or grub, for they show very plainly as the earth falls through on the heap, and runs down the sides. One half of this compost, and the other half made up of two parts cow dung, and one part clean well-washed sand, will grow the Hyacinth as well as they are grown in Holland. The compost must be well mixed, and should lay together all the warm months, in a situation where it can have all the sun, and be turned over several times.

PREPARATION OF THE BED.

In September dig out a space four feet in width, and as long as the number of bulbs to be planted in one bed require, reckoning that fourteen grow in every foot of length, namely, two cross rows of seven in a row. Let the depth be two feet, and the place well drained. At the bottom put three inches' thickness of cow dung or horse dung rotted into mould or thoroughly decomposed; the dung from an old melon or cucumber bed will answer; upon this put the compost from the heap already described, and fill it up three inches above the surface of the ordinary ground, for the compost will subside; towards the end of the month it will have sunk a good deal, and more must be put on so as to make it quite level with the surface of the other ground.

ARRANGEMENT OF THE BULBS.

To make a bed look to the best advantage you must choose such bulbs as will all blow in one season, that is to say, at one time, for nothing looks worse, or more completely mars the effect of a bed, than to have some blooming and others not showing colour in the early season, and some decayed while the others are in flower when it is later. The colours should be diversified according to arrangement, and it would be well to get all the varieties of the same length or near it. The arrangement that would be most effective is that described below; it is impossible to give a better contrast in each row, or from row to row. It is also desirable to limit the varieties to one of each colour, that is to say, the dark blue only one sort, the light blue only one sort, and so on, each colour being represented by only one kind. The subjoined is the arrangement proposed:—

dark red	white	light red	dark blue	light red	white	dark red
light blue	dark red	white	light red	white	dark red	light blue
yellow	light blue	dark red	white	dark red	light blue	yellow
dark blue	yellow	light blue	dark red	light blue	yellow	dark blue
light red	dark blue	yellow	light blue	yellow	dark blue	light red
white	light red	dark blue	yellow	dark blue	light red	white

The same may be repeated as often as the length of the bed requires. Experience may enable a person in time to improve greatly upon the first appearance, by adopting more than one variety of each colour, but it is better not to attempt it at first. The compost being quite level with the other part of the garden, the bulbs are to be placed six inches apart every way, and the best way to mark the place is to strain a line down the centre of the bed, and draw a slight drill or make a mark by merely pressing the line to the soil by drawing the back of the rake along it; then stretch it in the same way six inches off, and by the repeating this making the seven long marks. The cross marks may be made by pressing a straight rod in the soil slightly at six inches apart all the way down. On the points where the lines cross each other place the bulbs, and press them gently into the soil so that they may not move when you cover them up; when they are all placed, put in some pegs at the different parts of the bed, the tops standing six inches above the base of the bulbs, and make up the soil to that height all over the bed. By rights the bed should be boarded round with a six-inch rim to fix on, for then the compost to cover in with would be so easily regulated. Have hoops or irons across the bed, to enable you to cover them against frost and heavy falls of snow or hail, and it is worth while to have a stage over them, and a cloth like those for tulips and carnations.

MANAGEMENT UP TO BLOOMING TIME.

The only necessary attention now is to protect them against bad weather through the winter months, and for this purpose litter of any kind will answer all November, December, and January. In February, or March, according to the season, they will be above ground, and then the mats or cloths must be used; because the bloom buds, if affected no other way, will be greatly stunted in size by frost. As the blooms begin to show colour, they must be shaded from the violent heat of the sun and from strong winds; it may be necessary to place sticks and tie up the stems of the taller kinds, but they cannot be too dwarf for beds. As the bloom advances, they must be shaded from the sun, for it would materially shorten the period of their flowering if they were exposed to its scorching rays.

AFTER BLOOMING.

The whole of the covering should be removed as soon as the perfection of the bloom has gone, and the plants must have the benefit of all the rain and air until the leaves turn yellow. They may then be taken up in as many baskets as there are sorts, and as a simple mode of doing it, perhaps the best way would be to take up one sort at a time, because there can then be no mistake; the kinds all form lines in particular directions, and the roots are so large that there is no danger of missing any, like tulips, which occasionally elude our vigilance, however careful we may be. The bulbs should be taken to a shady place under cover, and be laid out to dry off, and remain there until the foliage is completely dead, after which they should be trimmed, that is, the stalks and leaves should be cut close, and the fibres pulled off, and the offsets taken away; they may then be put away for the season of rest.

TREATMENT OF OFFSETS.

Prepare beds similar to those for blooming the finer bulbs, and plant the offsets in the same number of rows, but they may be three inches instead of six inches apart, one of the ways, whether across or lengthways is immaterial in respect to the bulbs, but probably it is best to have them close in the cross rows, instead of the long ones, on account of their being easier kept clear of weeds. Plant them so as to be four or five inches covered. When they are up, any that show bloom should be deprived of all the buds but one or two at the top of the truss or spike; one is enough if you can ensure it, though two are left until it is seen that the top one will stand. These beds need not have any protection beyond a little litter of some kind loosely laid upon the top. When the foliage has decayed down, the bulbs may be taken up as the matured ones are, and the whole sorted; the larger ones to be put in six inches apart instead of three; they are to be replanted and treated similarly each year until they arrive at the size which is marketable, and this may be generally told by the size of the spike, which should be reduced to a single top pip, season after season, until it will come sufficiently large to look well with the matured bulbs. The object of depriving the spike of its buds all but one, is to throw the strength that would be divided among the flowers into the bulb itself.

RAISING FROM SEED.

Hyacinths readily yield seed when in the open ground, though rarely when housed or forced. This seed should not be gathered till the vessels turn yellow, when it may be cut off with the stem, and placed in the sun to dry. Prepare a bed as for the offsets, and having raked the surface very smooth, sow the seed very thinly and evenly all over it; then sift more of the compost over the seed so as to cover half an inch. When the young plants come up they will not be without weeds, which must, as soon as they can be got hold of, be removed by hand: nothing will prove more mischievous than allowing weeds to grow; and therefore it must be looked upon as absolutely necessary to prevent it by hand weeding as often as may be required, even twice in a week, for the small bulbs must not be interrupted by the fibres of weeds. When the foliage has died down, once more clear the bed of weeds, and sift a good inch and a half of compost upon them all over: this will not be too deep for the plants to come through, and it will be a great protection against frost; but besides this, it will be necessary to place some litter on the surface all the winter months. They will come up much stronger the second season, and must be constantly weeded as before: when the foliage has died down again, the bulbs will be large enough to take up. Let the bed be prepared as before, and in September, or early in October, plant them three inches apart in the row, and six inches from row to row like offsets, and this to be repeated season after season, except that when large enough to justify it, they are to be placed six inches apart, instead of three. As they indicate bloom, treat them as offsets are treated, by pulling off all the pips but one or two at the top of the spike; continue this until they are matured in size and strong in flower. When however they first begin to throw up bloom, throw away any one not better than we have got, for new things not better than those we already possess are worthless, except as mixtures. As soon therefore as any of this kind show themselves, condemn them. Generally speaking the improvements on old sorts are so few, that the cultivator will have but little trouble to mark the few worth propagating; the rest may be considered defunct, and only fit for borders.

MONTHLY OPERATIONS.

JANUARY.—The bulbs being in the ground, and requiring nothing but protection against hard frosts, should be covered with litter of some kind.

FEBRUARY.—A continuation of protection being all that is required, the litter need not be removed until the plants are breaking through the surface.

MARCH.—The beds may now have the sun, and all the air if there be no frost; but must have the litter replaced on doubtful evenings, lest a frost should come on in the night. As soon as they are well up the earth should be stirred between the roots, the compost being well crumbled and laid close round the stems.

APRIL.—The flowers will be developing themselves rapidly if the spring has been mild, and the past winter genial. Before the flowers are opened warm showers will be beneficial; afterwards they would only damage the bloom. The main roots will continue in bloom a long time, if carefully shaded. The offset buds must be looked to, and the pips reduced on each spike to one or two of the top ones; so also must seedlings that are beginning to flower. Younger seedlings, as well as the beds generally, must be carefully weeded.

MAY.—When the bloom has passed the perfection sufficiently to be no longer appreciated for show, the coverings of every description must be taken off, but until then the sun ought never to shine on the open flowers. An arid sun and moderate rain are however desirable for the perfecting of the bulbs. Keep every thing clear of weeds. Mark any seedlings that are likely to be useful as additions to the present varieties.

JUNE.—This month the foliage will in general decay enough to allow of the bulbs to be taken up and placed in the shade to dry; those however which are seeding will not be so far advanced, they will keep growing until the seed is almost ripe; of course there must be exceptions in favour of such plants. We have seen nearly every flower in a bed seed, and the plants keep growing, till a late period; but if seed is not desired, the pips of bloom should be picked off as soon as the cloth is removed, or the other coverings taken away.

JULY.—This month they will have dried

sufficiently to be deprived of their decayed foliage and stems, and be placed in bags. Seeds may be gathered of such as are standing out, and the bulbs taken up as soon afterwards as the leaves die down.

August.—Turn out all the compost from the beds, and lay it in ridges on each side, to be turned over occasionally to sweeten.

September.—Examine your bulbs and sort them for planting. Never plant a doubtful one in the best bed, as it is obvious that in an arrangement so uniform, a missed bloom or a decayed plant would be a great eyesore.

October.—Sow seed as directed. Plant the best bed and all out beds and offset beds: if there be any reason for keeping bulbs out of the ground, a month is no object, but this month is the best: from this time all the beds, but especially seedlings, and beds of seed, must at any cost be kept clear of weeds.

November.—Plant whatever may have been left out of ground until now, and sow seed if not done already. Cover the seedlings and small offset beds with litter.

December.—Repeat the November treatment all through.

PROPERTIES OF THE HYACINTH.

Some of these are already appreciated a little, but none sufficiently distinct. There are a few of the present varieties which have long spikes of flowers, and those very compact—both of which are desirable—but they for the most part have very ill-shaped pips. There are others which have very prettily formed pips, of a great size, but they are far apart on the spike, and some hang awkwardly; and those who exhibit the flower, know but little as to what caprice is to decide their fate; but as the time when the flower can be seen forced has arrived, and the period for showing in pots is approaching, we take the opportunity of defining a little the properties which should be esteemed; as nearly all the points have been attained in different flowers, there is every reason to hope, that as soon as we persevere in raising seedlings in this country, and force the Dutch to follow the example, we shall make rapid advances toward obtaining several properties in the same flower. We commence with the pip.

Each pip or flower should be round and not ragged. The petals should be broad, thick, blunt at the ends, not pointed, and reflex enough to throw up the centre well. The foot stalk should be strong, and hold the flower out stiff in a vertical position, that is, facing the spectator, and by no means weak, to allow the pip to hang with the face sloping toward the ground. The foot stalks should also be of a length, to make the pips touch each other and no more. The pips should be large, for unless the pips be large they cannot touch each other without very short foot stalks, and the flowers would be so close to the stem, that the truss itself would be no size. Double flowers should have the rows of petals above each other very regularly imbricated, so as to throw up the centre. The outer petals, therefore, of a double flower need not reflex, and should not reflex so much as a single one, because the centre is raised by the second and third rows of petals.

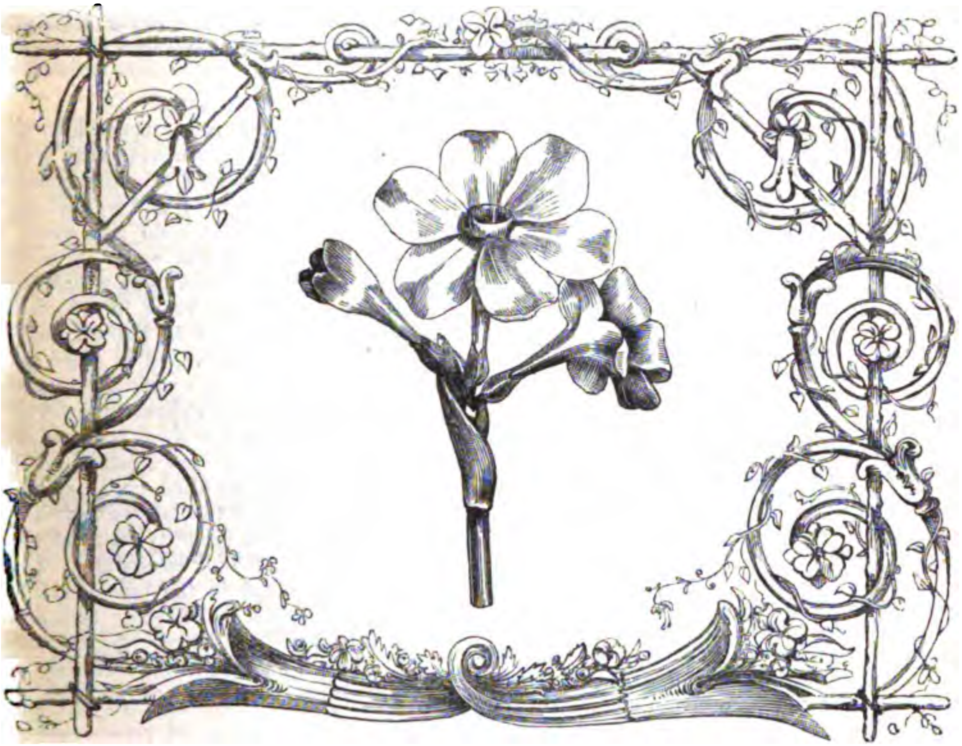
The spike should be bold, round, compact, and pyramidal, with a number of flowers at the bottom, gradually diminishing to a single flower at the top. The flower stem should be very strong and upright, and no part of it should be seen from the lowest flowers to the top, in consequence of the closeness of the pips to each other.

The colours should be bright, clear, and dense, whatever the shade; and any better approach to scarlet, blue, or yellow, than those shades we now possess, would be highly esteemed: flowers with dark eyes, very clear outsides, and those with striped petals, would be held to be better than selfs in general, but would give no point against form.

GLENNY ON THE NARCISSUS.

The Narcissus is one of the most lovely of our spring flowers. The perfume is more powerful than that of most other flowers; and if there are too many in a room, it will affect any weakly person. It appears a powerful narcotic, and will give even robust persons a slight headache. The varieties most esteemed are those which bloom in large clusters. Both the yellow and white are esteemed, and many thousands are annually imported from Holland, and are grown as well in the common borders as in pots and glasses. They make a pretty display among the early spring flowers, and there are many different varieties which group well. The best possible effect can be produced by them in wildernesses, in large rough borders, clumps, and geometrical gardens. The soil in which they succeed best is rich and light, but they will grow in anything, from sand to stiff clay. In light rich soil the bulbs do not deteriorate, and the offsets may be grown up to maturity very soon, and they may be raised from seed without any difficulty. But the culture is so like that of the hyacinth, that we need only repeat the directions in full, if we desired to go into details.

There is a difference between the mode of growing for the sake of stock and growing for bloom. Those who grow for stock should take up the bulbs every season, and remove the offsets, to be planted out till they come to maturity; even these are taken up every year, and kept out of ground some time to rest, and then planted again at the proper season, sufficiently far apart to enable them to swell and become good round bulbs. On the other hand, those who wish merely for quantity of bloom let them remain in their borders or beds three years. There is then quite as much increase, but the roots, from being close together and not having room to swell, become unsightly, and would not in a general way do for market; for the greater portion of those imported or brought to market in spring are for blooming in glasses, which expose the entire bulb; and if not handsome, for this purpose they would be unsaleable. The varieties which bloom with handsome trusses of many flowers are commonly called polyanthus narcissus; but there are many that flower with a single bloom, others with two or three. The colours simply vary from yellow to white, some being yellow with a deeper coloured cup, almost orange colour, others are white with yellow cups; some are double, others single; some pure white—indeed, one is called the paper white, and exceedingly pretty it is. Upon the whole, the numerous varieties of the narcissus form a beautiful group, and will bloom in any way that the ordinary spring bulbs will flower. For this reason we have placed it among them in the following paper on the many ways of flowering the spring bulbs, such as hyacinths, crocuses, tulips, and others, which will do well under the same treatment.



PROPERTIES OF THE NARCISSUS.

The great variety of this beautiful spring flower would almost seem to defy us to lay down general rules, yet there is no more difficulty in imagining what would be the most beautiful than there is in any other of the numerous families for which we have already provided models of perfection.

It is very true that some narcissus have only a single flower, others a large bunch—some are white, others yellow—some have narrow petals, others broad—but all are pointed. The only varieties, however, calculated for florists or show flowers, are those which have bunches or heads of flowers, and a few necessary qualities would render them beautiful objects.

First.—The flowers should be circular and large.

Second.—They should expand flat, and the cup which is in the centre should stand out well.

Third.—The petals should be thick, smooth, firm, free from notch or roughness on the edges, and have no points.

Fourth.—The bunch of flowers should not consist of less than seven; the foot-stalks should be of such length as to allow the flowers to touch each other at the edge, and present an even, though rounding, or dome-like surface, with one bloom in the middle, the other six forming a circle round it.

Fifth.—The stem should be strong, firm, elastic, and not more than ten inches in length. The leaves should be short, broad, and bright, and there must not be more than one flower-stem to a show flower.

Sixth.—If the variety be white, it should be pure; and the yellow cup should be bright. If the variety be yellow, it cannot be too bright.

Double flowers, and narcissus of numerous kinds, with only one or two flowers in a sheath, will not be considered subjects of exhibition, except in collections of forced flowers.

GENERAL REMARKS ON THE HYACINTH, THE NARCISSUS, AND BULBS IN GENERAL.

There is so much similarity in the management required for the hyacinth and narcissus, that they ought almost to be coupled, as are carnations and picotees. As there is not the diversity of colour in the narcissus that we have in the hyacinth, there is no temptation to grow them in beds; in all other respects, whether from seed, from offsets, or in growing matured imported bulbs, the management is the same. But we have left a large field untouched as regards the different modes of growing the hyacinth, and confined ourselves to the out-of-door treatment; and reserved what we have to say of forcing and house growing for bulbs in general, such as the early kinds of tulips, the narcissus, the hyacinth, the crocus, and other subjects, that we ay treat them all alike.

Of the many ways in which a bulb may be grown, the most common are the following:—in water, in pots of mould, in wet sand, and in moss: all of these are well in their way, but for elegance give us moss; for ease, water; for a make-shift, sand; and for the sake of the bulbs themselves, pots of mould.

IN WATER.

Fill up the glasses till the bottom of the bulb will touch it, and constantly fill up the glass as the bulb absorbs it. The custom of putting them in the dark has become very prevalent; but experiments which have been tried, purposely to test the advantage derived from this plan, give no indication of its superiority. The narcissus, hyacinth, crocus, and early tulip, all grow well in water; and some that we have seen placed in a strong light from the first, have proved as strong and perfect as a similar number placed three or four weeks in the dark. The notion entertained is, that the roots should be developed before the growth of the foliage begins; and that, in the dark, the roots grow, but the foliage does not advance materially. We have not found this to be the case, although we have, until the present season, acted upon the suggestion. River water or rain water is far better than water from a well, and we have changed it every three weeks, though filling it up as it is absorbed by the roots will do. We have invariably objected to putting anything in the water, although we have seen it done by many, for we have never seen anything gained in colour, strength, or size of flowers.

IN WET SAND.

This has no other recommendation than the saving of trouble as compared with water, among those persons who fancied it necessary to be always changing it; and we feel quite convinced that the plants do not grow so strong in it as they do in water or mould. It has one advantage—its weight, which tends to steady the glasses or vases in which the flowers are bloomed. It is, indeed, easy to conceive that where a vessel is filled with sand, which contains no nourishing qualities whatever, the plant may exhaust the fertilizing qualities of the water soon, because these must necessarily be a very small quantity; and although it may be filled up as often as necessary, and be kept full, all the nourishing properties in a small quantity must be much less than if the whole bulk were water. There is, however, so much in the bulb itself, that the flower and leaves will develop themselves with a very little assistance. Nevertheless, there is a vast difference in the strength of a plant fully nourished and one starved by a limited supply.

IN WET MOSS.

This medium, properly prepared, and in a proper vessel, will be found both effective and pretty. Suppose it to be a flower-pot—the hole at the bottom should be stopped; but the wet moss enables us to grow bulbs in almost any shaped utensil: a punchbowl, a salad-bowl, a deep dish, basin, or jar will do. A little sand at the bottom, and the moss pressed down level with the edge, will be sufficient; the bulbs are then placed on the surface, and rather pressed in than otherwise. If the vessel be large enough to hold half a dozen or a dozen things, the centre may be a narcissus, round this six hyacinths, round the hyacinths a row of early Van Thol tulips, and outside of all a row of crocuses of the three different colours; or, as the tulips are inclined to yellow, perhaps blue and white alternately will do better. The moss is to be wetted well, and fine green picked moss should be piled up all over the bulbs, which may be completely hidden by it. This might be done in a large punch or salad-bowl, or round dish, or glass milkpan. Smaller vessels may be used with single bulbs, or with two or three, or more. The moss in which they are placed should be pressed down, and need not be of the finest colour; but that put at top, forming a rounding surface, and covering the bulbs, ought to be of the best colour, and the handsomest that could be picked; for the moss is of itself a pretty object, even before the bulbs throw up their green foliage. Those who prefer to see the bulbs may merely put some of the best moss between them, and not enough to cover them.

IN POTS.

It is the practice to pot bulbs close to or above the surface, to place them all under a heap of ashes, or sawdust, or sand, to be taken out as they are wanted for forcing. It is far better to obtain the pots made on purpose, twice the height of an ordinary pot, and to put the bulb on the soil with the pot only half filled; then fill up the pot so that a good three or four inches of compost is above the bulb: these may be plunged in the open ground, and covered with litter. The plant begins growing directly; and when required for forcing from time to time, they only want to be placed in heat a little earlier, to make allowance for the time they are coming through the earth; and all the later ones, instead of having three or four inches of yellow foliage, which has been drawn up through the ashes or sawdust, or other medium in which they have been buried, will be found hardly through the compost, or, if through, by no means drawn up. This applies to all the hardy bulbs that are capable of being grown in pots. The soil should be the same as has been recommended for beds; and the only care required is that of supplying water, so that the soil should never be dry; but, as there is real nourishment in the soil, it must not be saturated with water always; on the contrary, the treatment should be much the same as other potted plants, such as geraniums, which ought to be kept moist, but never wet. The pots should always be in a strong light, and, until the flowers show colour, may have as much sun as possible, and air in mild weather, unless they are in forcing heat, which of course renders this improper. For forcing, the bulbs may be potted as early as September, and may be placed in heat at once; and from that time till the end of December, they may be potted with pretty nearly as good success; but some bulbs are weakened by keeping out till that time, and others, even of the same varieties, may be picked out that stand very well. We prefer on every account potting early, and plunging the pots to their rims in the ordinary ground, merely covering with litter, to keep off the frost in case of a severe one. From this situation they can be taken to force as they are likely to be wanted; and they make far more handsome plants when so treated than they do when buried in anything; and the two or three inches' growth is above instead of under the surface.

It only remains for us to name a few of the best and cheapest for the different purposes, always premising that every kind will grow well in pots, but that some do better than others in glasses.

HYACINTHS.

For glasses or pots.—Early: Waterloo, d. red; Groot Voorst, d. pale flesh colour; Duc de Normandie, d. blue; Alamode, d. blue; Passe Tout, d. blue; Alamode, d. white; Nannette, d. white; Grand Vainqueur, s. white; Paix d'Amiens, s. pink; L'Amie de Cœur, s. purple. *Later:* Panorama, d. red; Mignon de Dryfhout, d. blue; Lord Wellington, d. blue; Kroon von Indien, d. dark blue; Pasquin, d. light blue; Anna Maria, d. white; Virgo, d. white, violet eye; Orondates, s. light blue; La Balaine, s. flesh colour.

For pots only.—Early: Charlotte Marianne, d. red; Madame Zoutman, d. rose; Aimable Rosetta, d. flesh colour; Vulcan, s. light blue; La Deese, d. white; Miss Kitty, d. white, red eye. *Later:* Robin Hood, d. dark blue; Globe Terrestre, d. light blue; Susannah Elizabeth, d. blue; Don Gratuit, d. white; Og, Roi de Basan, d. white; Prince of Waterloo, d. white; Sultan Achmet, d. white; Boquette d'Orange, d. yellow; Louis d'Or, d. yellow; Voltaire, s. white; St. Clair, s. red; Grand Vidette, s. light blue.

NARCISSUS.

For pots or glasses.—Grand Monarque, white and yellow cups; Czar de Moscovi, white and yellow; Grand Primo, white and orange; Bazelman Major, white and yellow; Soleil d'Or, yellow and orange; New Yellow Primo, yellow; Double Roman, yellow and white; Paper White, pure white.—Jonquills, yellow, double and single.

EARLY TULIPS.

Single.—Clarimond, two varieties, rose and white; Van Thol, red and yellow; New Yellow Van Thol; Keizer's Kroon, scarlet and yellow; Paragon Constant, rose and white; Gold Standard, gold colour and red. *Double.*—Van Thol, red and yellow; Tournesol, scarlet and yellow; La Candeur, white; Bonaparte, dark violet; Crown Imperial, red and white, Double Yellow.

THE KITCHEN GARDEN.

Sow beans, beet, borecole, brocoli, cabbage, carrot, cauliflower, celery, chervil, cress, endive, herbs, kidney beans, lettuce, mustard, peas, radishes, spinach, scarlet runners, turnip, and vegetable marrow.

Plant and Transplant artichokes, asparagus, basil, cabbage, capsicums, cauliflowers, celery, kidney beans, leek, lettuce, love apple, onions, parsley, potato, New Zealand spinach, sea kale, and Swedish turnip.

General Directions.—Clear, trench, and then dung and dig the ground for the winter crops, as brocoli, Brussels sprouts, &c. Bear in mind the necessity of systematic rotation; that is, repeat not the same crop nor any of its allies on the same soil, but rather substitute plants as different in constitution as possible: for instance, any of the Brassica tribe may come after Legumes, but brocoli should not follow cauliflowers, nor peas beans, and so on. It is commendable, especially in small gardens, to intermix the crops, that is, to plant or sow the taller crops, such as kidney beans, or peas, so wide apart as to admit of two or three rows of cabbage or lettuce being introduced between them. This will be found beneficial for all, by admitting the light and air more freely, by which abundant and healthy crops will be realized. Attend in due time to thinning and pricking out seedling plants; and hoeing and stirring the soil after rains. Keep down slugs, by sowing fresh slaked lime over the garden late at night or early in the morning; decoy them and other vermin by laying down broad pieces of wood, slate, greased leaves, handfuls of seeds, &c.; dust over all the seed beds with wood ashes, soot, &c. Water every thing that is transplanted, unless the planting is succeeded by a good rain, which is best.

Artichokes (Globe) may yet be planted from strong suckers; the sooner the better.

Asparagus newly planted, should be mulched and watered with manure and salted water; it may yet be transplanted. Some prefer to thin out the young plants where sown, but this should not be done unless the ground was thoroughly prepared. When cutting from the established beds, do it so as to thin the plants evenly according to their strength.

Basil.—Plant out on a warm spot, say one row along the bottom of the south wall, or in rows fourteen inches apart, and eight between; keep some in pots under glass.

Beans.—If much in request make another planting; top them when in flower: it is questionable whether there is much benefit derived from earthing up, but to hoe and clean the soil well is certainly beneficial.

Beet for pickling, does not require a very rich soil; sow these at ten inches apart. Sow the main winter crop; the white Silesian beet is excellent: allow eighteen inches between the rows.

Borecole, which includes the various kales, may be sown now; and as these are among the most hardy of vegetables, it may be well to sow largely. Prick out those sown last month.

Brocoli.—Prick the plants out from the former sowing, and make another; put the best plants by themselves, at wider distances than the smaller ones.

Brussels sprouts.—Prick out, and make provision to plant a considerable quantity.

Cabbages.—Again plant out at eighteen inches asunder; and sow a few more: divest those which are cut, of their under leaves, and allow them to stand to produce a crop of sprouts; if these are thinned to one or two, they will make tolerable heads.

Capsicums.—Plant out a few of these from the pots along the south wall, or on a very warm border, about the middle of the month; keep the ball unbroken.

Carrots may still be sown early: in stiff soils, make holes with a dibble, fill with fine soil, and drop in the seed: thin the main crops to eight inches apart; the other sowings may be left thicker.

Cauliflowers.—Root out as soon as the heads are cut, and pull up at once all that button; remove the stumps to the rubbish heap to rot, or reserve them for charring. Prick out a fresh batch of young plants, and also sow and plant out permanently a few more.

Celery.—Prick out into a very rich soil, and water, and shade them for a few days: hoop them over so as to facilitate covering from frost if requisite; water slightly with liquid manure. Towards the end of the month, the March sowing will be ready to plant out; prepare trenches for that purpose, say ten inches deep, two feet wide, and six feet between; the latter space is convenient for lettuces or any light crop: put in the trenches six inches of well-rotted manure, (some prefer it green or fresh,) dig it in, and plant two rows in each trench at ten inches apart.

Chervil.—This requires to be sown every month when it is much required: it will grow almost anywhere, and with little trouble.

Cress.—Sow twice or oftener this month, choosing rather a shady place; use a slight covering to hasten germination.

Endive.—Sow a little towards the end of the month, in a rich, open, and warm place.

Herbs may yet be put in either by seeds or cuttings, and as soon as possible.

Kidney beans.—Plant out those raised under glass about the middle of the month. The seeds may be put in at the same distance, viz. four inches in the row, and eighteen between; or what is better, set the rows four feet apart, and plant cabbages between.

Leeks.—Plant out in rows fifteen inches apart and twelve in the rows; give them a strongly manured soil; raise up the plants with a fork; the tips of the leaves and roots are taken off, to expedite the planting.

Lettuce.—Sow a few more; and plant also successionally, a foot apart each way.

Love apple, or *Tomatoes.*—Plant out against a south wall; keep the ball unbroken and nail up the plants: the middle of the month will do.

Mustard.—If the weather is warm, sow in a shady situation, where it keeps longer in a young state. Sow twice or oftener.

Onion.—Thin to four or five inches, and transplant a few in showery weather; clean thoroughly.

Parsley may be transplanted if done with care; take only the curled plants; also when thinning attend to this; leave it at from four to six inches distant.

Potatoes may still be planted in moderation; do not dung strongly nor cut any of the sets; work the soil well, and plant at three feet apart, and one foot in the row: hoe between, but do not earth up the advancing crops too early.

Peas.—Sow about once a fortnight; stake early, and according to their respective heights; top the tall growers frequently.

New Zealand Spinach.—A few plants of this may be planted out now; it will be found useful.

Radishes.—If ground is scanty, drop in a few seeds among any of the other crops; sow twice this month.

Scarlet runners.—Sow now; place them so as to screen other crops; they are quite ornamental.

Sea Kale.—Thin out the buds to about three within a square of six inches, and water with salted water, say two ounces to a gallon of water.

Spinach.—It is common to sow it between every sowing of peas; have it always well thinned; sow now in a cool place.

Swedish Turnip.—This excellent sort should be grown as a reserve in case of a failure in the potato; it is the only kind that bears transplanting well; give it a light, richly-manured, and well-wrought soil; plant in rows twenty inches apart, and the plants a foot asunder.

Turnips.—Put in the main sowing about the middle of the month; thin the early ones to eight inches.

Vegetable Marrow.—Plant out from the frames under hand lights to remain for a time; and if they are planted on beds below which is a little fermenting material, it is all the better.

THE FRUIT GARDEN.

General directions.—It is scarcely necessary to observe that a thorough and universal hoeing will, independent of other advantages, tend much to keep this and every department out of doors free of weeds. Look over the grafts, and loosen the ties if necessary; they must not be entirely removed. Disbudding, and thinning the fruit, with keeping the trees *clean*, will be the principal operations.

Apples.—Caterpillars will now make sad ravages if timely "hand picking" is not attended to: when the fruit is fairly set, give all a good syringing in the morning with soap suds. Thin and give the same kind of attention to standards, that is given to the wall trees; they will equally compensate for it.

Apricots.—Thin, and disbud gradually; remove any nails likely to come in contact with the swelling fruits; syringe occasionally.

Cherries.—Towards the middle of the month,, give a final thinning of wood and fruit according to the state of the tree; fasten in the shoots which will bear it. Syringing will be necessary if the weather is dry and warm, and do it always early.

Currants.—Keep the ground clean by hoeing: if caterpillars appear, dust the bushes when damp with white hellebore powder.

Figs.—No thinning of the fruit is usually required, excepting of those which were too forward last autumn. Give a good syringing before the leaves cover the wall; the cobwebs and filth are very injurious. Thin the young shoots moderately; and top them when six inches long.

Gooseberries.—On dewy mornings dust over the bushes with white hellebore powder; this will kill and prevent the caterpillars: where very fine fruit is wanted, go over now, and thin out the small ones.

Nectarines, where they have not broken well at the points, may be cut back to the nearest good bud; thin gradually, and syringe occasionally at the appearance of insects: allow a slight protection, (from cutting winds and frosts,) to remain a little longer.

Peaches.—Thin the shoots, taking away all the misplaced and diseased ones first; the lowermost bud on the upper side of the shoot, is usually left for next year's bearing wood; more if required further along the shoots: thin the fruit, removing the small and bad ones first. Syringe with clear water, and then with tobacco liquid, to kill the green fly. Part of the protection afforded to the blossoms may be retained till the middle of the month.

Pears.—Rub off the foreright shoots, and many of the deformed and overcrowded fruits.

Plums.—Attend to thinning the young shoots and fruit, which in all cases is to be done gradually, and as it were by constant attention—not neglecting it for a time, and then thinning severely, which is very hurtful to all trees.

Strawberries.—Hoe immediately, and cut away all runners appearing, unless required for young plants. Mulch the plants with dry litter, as straw or hay; spent hops is preferable to any other mulching, when they can be got.

Vines.—Divest the trees of all superfluous shoots; and before and whilst in bloom a slight protection at night is desirable.

THE FORCING GARDEN.

General directions.—An increase of air, and a slight decrease of water will now be the leading features of importance, of course varying according to circumstances. Fruit wanted very early, may be obtained so, by keeping the apartment closer than the flavour of the fruit would warrant; only this sacrifice may be of less consequence at the time.

Apricots.—Temperature, 75 degrees by day, and 55 degrees by night. They are not much forced, although there is no good reason why they should not be; withhold the water gradually, both in damping, syringing, and at the roots; and when they commence to colour, withhold it altogether; give air both night and day as the weather allows.

Cherries.—Temperature, 65 to 70 degrees by day, and 50 degrees by night. In many cases the sashes may be let down at full length, and remain so unless wet or very cold. Give no water, as the fruit should soon be ripe, and must be very carefully gathered. Nail in, or cut away all the straggling shoots, and give the benefit of the sun as much as practicable.

Cucumbers.—Temperature, from 80 degrees to 90 degrees by day, and from 65 to 70 at night. Always maintain a moist atmosphere; water most in the mornings, yet seldom over the leaves. Fumigate gently and often for green fly. Thin those in rapid growth daily; impregnate those required for seed; shut all up early in the afternoon; do not overburden the plants, two and three good fruit at a time on a plant, is sufficient.

Figs.—Temperature, 70 degrees to 75 by day, and 60 degrees at night. Stop all the shoots at from six to nine inches long: decrease the moisture when there are many ripe. Those in pots may be removed to another house, and, after a short rest, started again for another crop; but if there are plenty on the walls, this will not be prudent: handle the fruit very gently, and lay it in a cool place until wanted.

Kidney beans.—Temperature, 70 degrees to 80 degrees, by day, and 60 to 65 degrees at night. Syringe often, as red spider is apt to make progress; maintain a moist heat; water does more injury to the flowers than the beans. Apply liquid manure as the apparent vigour of the plant may determine.

Melons. — Temperature, from 80 to 90

degrees by day, and 70 to 75 degrees at night. Water less as the fruit ripens; do not water over the foliage; always shut up early. When the fruit gives out a smell, leave a little air at night; and when cracking around the shank, it is generally ready to be cut. The succession crops must be kept thin of vine; two or three fruit is enough on each plant. It is safer to impregnate always. If the old plants are in a healthful state, cut them back after the fruit is gathered; apply a little water and heat, and a good second crop will often be obtained: very little artificial heat is now required, if due advantage is taken of sun heat.

Mushrooms.—Temperature, from 55 to 60 degrees. This is a good time to make up fresh beds; give air freely, and keep the house dark; very little water will now suffice.

Musas.—Temperature, 75 degrees at night, and from 80 to 90 degrees by day. When a considerable number of the fruits are well swollen, decrease the amount of water gradually, but at no time allow these, or any plants, to be so dry as to flag.

Nectarines.—Temperature, 75 to 80 degrees by day, and 55 to 60 at night, as before. Finish the tying, &c., of the early house. Give more air as they begin to colour, and leave a portion also at night, when the fruit is nearly ripe: if red spider appears, slightly sulphur the flues when cold.

Peaches.—Temperature, 75 to 80 degrees by day, and 55 to 60 at night. A thorough syringing should be given before they begin to colour. Give plenty of air, as with nectarines. In the later houses, continue to water, disbud, thin, and tie in.

Pine apples.—Temperature, from 80 to 90 degrees by day, and 70 degrees at night; shut up with a sun heat of 95 degrees. Shade slightly the lately shifted plants in each department, and *aim* by keeping up the moisture and warmth, with air, to have a "*sturdy* and quick *growth.*" Withhold water from those which are ripening; the suckers may remain on for a time, whether they are to be grown on the old or new system. Give a little air to all at night.

Strawberries.—Temperature, 65 degrees by day, and 55 degrees at night: it is almost too warm to have these in a house where there is much artificial heat; keep them near the heat recommended.

Vinery.—Temperature, 80 degrees by day, and from 60 to 65 degrees at night. Avoid currents of air, and sudden transitions, both as regards moisture, and in every other respect. The late houses must be kept warmest, and the atmosphere somewhat dry, a little before, at the time of, and after flowering and setting. Thin the branches and wood early, and by degrees: when tying, do not strain the shoot much at first, and never tie tight. Allow young vines when once stopped, to ramble awhile.

FLOWER GARDEN AND SHRUBBERY.

Sow a little of every thing worth keeping up a succession of, as hardy, and half-hardy annuals, biennials, and perennials.

Plant and transplant all those raised in heat, after being hardened off; also all the green-house and bedding-out plants.

General directions.—This is a busy month, both physically and mentally. Plant out the tender and half-hardy bedding plants towards the end of the month, and let the most tender, such as dahlias, and heliotropes be put out last. In arranging them, the coloured plan studied and prepared in the winter months, will be found of great service. In planting out, attend to producing a *contrast* of colour, that is, place the most *different* colours together, or in contiguous beds. If the beds are of moderate size, it is best to fill them with one colour: or a very good effect is produced by introducing a belt of some distinct colour. Thus, for example, against or next to blue, (say salvias,) plant yellow, (such as calceolarias): next to crimson, (say verbena,) plant light blue, (as nemophila.) Where the figures are on gravel, surround or edge them with a cold colour, as blue, or even green; when upon turf, surround them with a warm colour, as yellow or white. Give them all a soaking with water after planting, and it may be well to form a basin around a few of those turned out of pots. Finally, harden off all the store plants: finish propagating. Hoe the shrubberies again; those shrubs which have been lately transplanted, should be mulched again and watered.

Alpines.—Keep the pots plunged nearly to the rim among coal ashes, in a cool shady place; they then dry less rapidly, and do not so often suffer from drought as when more exposed; have them regularly watered. Propagate any scarce kinds.

American plants.—As soon as the flowers of any of these, such as rhododendrons or azaleas, are faded, have them all cut off, removing the whole of the seed-vessels, stalks and all. By this means, the energies of the plants, which would have been expended on the useless seed-vessels, go towards forming blossom buds for another season. Of course, none of the leaves, nor any of the growing buds which push out just below the bunches of flowers, are to be taken away.

Anemones when in bloom must be shaded; and if the weather is dry, all the beds will require water. As soon as the flowers are over, if the room is wanted for other plants, take them up carefully, and plant them in the reserve garden.

Annuals.—Sow, plant, and thin out; stick a few neat sturdy twigs amongst them, by which they will be supported; this is better for many things than tying.

Auriculas.—Where seed is wanted, set apart a few selected plants by themselves, and carefully impregnate them. From the rest of the blooming plants remove the decaying blossoms as soon as they begin to fade, that they may not exhaust the plants; in doing this, simply pick off the individual flowers, but do not cut away the main stalk until it is quite decayed. After the bloom is past, give the plants abundance of air.

Carnations.—Water, stake, and thin the stems of the show sorts; sow seed.

Chrysanthemums.—Much may be done with these; plant out a quantity to take layers from in July. Plant any spare plants in the shrubbery borders; give manure abundantly.

Clematis, and other climbing plants, both deciduous and evergreen, as they advance into vigorous growth, should have the branches thinned, and those that are retained, properly supported according to the position they occupy: this attention, which is commonly bestowed upon rarer plants, will not be lost on the more common ones, such as those here referred to.

Dahlias.—Harden off, and plant out at the end of the month; prepare a rich soil to flower them in; but of the very choice sorts, plant some on poor soil, as it will be found that stimulated roots are the worst keepers; they require much water.

Fuchsias.—Thin out the young shoots; train some as *bushes*, but they are most handsome trained to one stem or so. Clear away all protecting material, and dress the soil about them.

Hyacinths.— Shade the beds when the bloom is expanded: pick off the flowers as they fade, that the energies of the roots may not be expended in seeding. If the ground is wanted for other plants where they are growing, take them up carefully soon after the bloom is past, and lay them in, in the reserve garden, to complete their growth.

Lawns.—The beauty of a lawn depends very much upon frequent mowing, especially early in the season; they ought now to be cut twice a month at the least—if oftener, so much the better. Roll them before mowing, and sweep up the cut grass quite clean.

Lobelias.—The large growing herbaceous varieties should be separated in March, each single crown being planted in a small pot, and set in a warm frame till it has started, and then hardened off: they are to be shifted once or twice; and early in this month may be planted out in rich soil in a moist situation, where they become very fine. They are very ornamental on the margins of akes. Some may be placed in large pots of rich loam, and are very ornamental to set near fountains, or in any cool situation; they require plenty of water.

Mimulus.—The varieties grown for beds must be planted in a cool moist situation: they all have a fine appearance on the margin of a lake.

Narcissus.—Shade the best beds whilst in bloom, and remove the flowers as they fade. Take up the roots, as with hyacinths, if the ground is wanted.

Pansies. Give liberal waterings in hot weather; adding a little weak liquid manure once a week; propagate by the side shoots planted under a hand light, and shade them; they will also root in a cool shady place without covering.

Picotees.—Thin and support the flower stems, but do not tie tight; water freely in the morning, yet very cautiously.

Pinks.—Of the prize varieties, thin the stems to one, and leave only three buds upon it; water with liquid manure, weekly.

Pinus.—Plant out any seedlings which are intended for planting out; do not place any manure about them, and have the ground beneath well drained. If any of the half hardy kinds are planted out, they might be put in a group, where they could be covered all together during winter.

Polyanthus in pots and past flower should be again planted out and divided, if worth increasing.

Roses.—Thin out the weak and over crowded shoots, and propagate from them; remove all suckers and side shoots from those budded last year, and suckers and useless shoots from the stocks. Water with liquid manure, sparingly at first.

Stocks.—Plant out, if not already done; the later ones will do yet, to flower in autumn.

Sweet Peas.—Lose no time in staking these, whether in rows or patches. Sow a few more to bloom late.

Tigridias.—Plant out those started in pots into beds of light sandy soil. Others may be planted out at once for succession. Their ephemeral flowers have a very good effect from the number which is produced in succession.

Tulips.—Screen from the sun and cutting winds by canvas awning; if it is made to give room to walk under it is the more desirable, as the flowers can be inspected with the greater comfort. Break off the seed vessels when the flowers are past.

Violets must be watered if very dry; and if young plants are not already taken off, do it soon, and encourage them by planting on rich open ground. They must be potted in autumn.

Wallflowers. Propagate a large supply of the double varieties by cuttings, under hand glasses, in sandy loam. Too many of these can hardly be obtained. The clear yellow, dark brown, and purple double varieties are very distinct and handsome.

WINDOW GARDENING.

The plants, especially those in flower, should be shaded from the too powerful action of the sun in the middle of the day. Maintain a free circulation of air, and keep the plants as fully exposed to light as possible. As the weather becomes warm and dusty, the plants should be regularly syringed, or they may be well drenched over head about once a week or oftener in hot weather, and any dust or other defect not removed by this means must be washed or picked off by hand. Stake and tie every plant neatly as soon as supports become necessary, using as few sticks to a plant as possible, never more than one if it can be avoided.

Bulbs, such as hyacinths, &c. will be nearly out of bloom; such as are still in flower should be kept in a cool shady situation to prolong their duration. *Cyclamen persicum*, and some of its varieties, will still be in bloom, and should have a careful but regular supply of water.

Begonias will require an increased supply of moisture as they advance; they should be shifted into larger pots if large specimens are wanted.

Camellias.—Water freely as the season advances; keep them warm, but do not expose them to the midday sun; keep the leaves very clean by syringing, or hand washing, if the first means be not effectual.

Cinerarias, as they go out of flower, may be parted and repotted; place them in a shady corner, and water regularly.

Fuchsias.— Thin out weak or ill placed shoots, shift them where necessary, and water freely; use manure water about once a week, not oftener.

Geraniums. — Carefully shade those in flower; cut out the stamens of every flower as it opens—they will then last a day or two longer; water regularly and copiously.

Myrtles and other evergreens will now be growing freely; water frequently, and keep the leaves very clean; stand them in a light but sheltered situation.

Roses.—Water regularly, and occasionally with manure water. Those out of flower should have the young shoots regulated and thinned, so as to form handsome heads for next season.

Primulas.—Pot off seedlings, or shift those previously potted if they require it; keep them in a rather shady situation; be very careful that they never get thoroughly dry.

Violets.—Keep the ground stirred among those planted out into the open ground, and supply them copiously with water in dry weather; cut off the runners to strengthen the main stems.

Wardian Cases. Water if necessary, and change or prune any plants growing out of bounds. Change the position often with regard to light, unless the case is fixed to a particular spot.

PITS AND FRAMES.

As these are emptied to fill the flower garden, they should be thoroughly repaired and made ready for the reception of the next crop, whether of flower or kitchen garden subjects. After well washing and cleaning, the pits should be lime-whited, using the lime as hot as possible, so as to ensure the greatest amount of destruction to insects.

Annuals.—Shift all the tender sorts that require it, and maintain a steady heat about them, giving air rather freely in fine weather, and shading in the hottest part of the day. Use a rich free soil for these plants, and sow a little more of any in particular request. The half hardy kinds should be gradually hardened off by giving air in larger proportions than before, admitting some at night, so as to allow of their being planted out of doors by the second or third week. Shift such as are intended to be grown in pots, and water freely, syringing in the afternoon.

Half-hardy Plants, as verbenas, calceolarias, salvias, scarlet geraniums, and others used for bedding out in the flower-garden, should be gradually inured to the open air, so as to feel little or no check when finally planted out. The lights may be left off entirely for the last few nights before planting. Do not let the roots become dry, or the plants will suffer, whether before or after removal. Pot off rooted cuttings, and put in others of such plants as are likely to be useful for decoration later in the season. Shift such plants as it may be desirous to increase by cuttings or otherwise, and do not allow them to bloom. Thus treated, new or rare things are more under command, and supply better and firmer cuttings than if turned out in the open ground. Water regularly, and fumigate whenever the green fly makes its appearance.

Forcing Pit.—Keep up a succession of flowers by introducing fresh supplies, but in smaller quantities than before, as many of the forcing plants will be in bloom naturally during the month; but, especially, have roses enough to meet the natural season with plenty; they are very seldom too numerous. Carry on incessant war with insects, and give air freely; shut up rather early, and syringe plentifully early, and also in the afternoon. The heat may range from 60 degrees as the minimum, to 70 degrees as the maximum, which will be sufficient for all forcing purposes.

THE GREENHOUSE.

Temperature.—From 55 to 60 degrees by day, and 45 degrees by night.

Ventilation.—Give air freely, and leave some on all night when the weather will permit.

Watering.—The supply of moisture must be liberally increased with the seasonal rise of temperature; by this time the plants will probably need water daily; the syringe may be used freely both morning and evening, so that any expanded blossoms are not wetted. Examine the roots especially of old or large specimens, and be well convinced that they are thoroughly soaked occasionally; they will suffer less then if they are sometimes missed.

Potting.—Continue to shift such plants as may require it, adapting the size of the pots to the habit of the plant, or the nature of the house or purpose for which it is wanted. Be very particular in the drainage of every pot, as on that alone more than on the soil will frequently depend the whole success of the plant.

Soils.—Always keep the potting-shed well supplied with the different soils, and other materials necessary, as pots, stakes, tallies, matting, &c. A great deal of time may be thus saved, especially as regards tallies, which may be made and sorted ready for use in winter, or on wet days.

Dressing.—Remove all dead leaves, flowers, or plants out of flower, as soon as they become faded; tie up and stop the creepers where necessary; never allow them to interfere with other plants.

Insects.—Use every means to keep down the various insects, whose numbers will become enormously increased as the weather grows warmer.

Aloes, and similar plants, should be supplied with more water as they advance in growth, and should be kept warm and exposed to intense light.

Agaves should be watered rather sparingly; they may be kept in the coldest part of the house to inure them for removal to their outdoor stations by the middle or end of the month.

Alströmerias.—Thin out the weaker shoots and support the others; give a good shift if necessary, and keep them in a cool airy part of the house; supply them freely with water.

Annuals.—Shift such as require it, and stake and tie them as they advance; water freely, as from the number and succulence of their leaves and roots they require a large amount of moisture when growing.

Azaleas that have done flowering should be well watered, and placed in a warm house to perfect their growth. Any symptoms of the roots getting dry from the water not penetrating the ball of earth, must be watched and attended to, or death will result.

Calceolarias.—Shade those in flower; they require plenty of water; use manure water occasionally. Keep them regularly tied as they advance, or they soon become unmanageable; stand them on an airy stage, near the glass.

Camellias.—Keep them growing steadily; water freely; disbud or cut back in time, so as to form neat heads. They bear shade well, and may now and then be syringed.

Cape Bulbs.—Some of the Gladioli will be in flower; water freely, and let them have all the air and light possible, in order that the foliage may attain a proper development.

Cephalotus follicularis (New Holland pitcher-plant), requires a pan under the pot; the glass over it may be elevated a little, but not for so long a time as to dry the plant too much.

Cinerarias.—Propagate by parting the roots and potting them again; or bed them out in a moist shady border to be potted up in September.

Chrysanthemums.—Part the old roots and repot them, or better, if not done before, turn them out in rows to grow to supply strong cuttings and layers later in the season; the first method will produce the largest and tallest, the second the neatest plants.

Crassulas.—Several of these will be in bloom; keep them rather cool to prolong their duration; water sparingly; when out of flower give them more heat and moisture, that they may grow freely.

Cyclamens.—Some of the varieties may be kept in flower far into the summer by keeping the roots in a cool and shady place, and starting them at different periods. Water regularly such as are in bloom, but reduce the supply when the leaves show signs of maturity, and dry them gradually.

Epacris.—Place in any airy but rather warm situation and water regularly and copiously until they have completed their growth.

Ericas.—Continue to shift as they display the necessity: remember that a heath once really dry at the root is lost; therefore water thoroughly and abundantly, shading the growing plants in bright sunshine, and allow no obstruction to the freest circulation of air. Keep the plants constantly stopped until the desired shape is attained, and syringe them on warm evenings. Propagate from the points of the young shoots as soon as they are long enough and firm enough for cuttings.

Fuchsias.—Continue to stake and train them as they advance, placing those which are commencing to flower in a light and airy situation, in order to have the flowers stout and well coloured. Give them manure water occasionally.

Gompholobiums, and similar creepers, must be regularly tied as they advance, or they soon look bad. Some of them will be in flower; shade them, and water carefully.

Haworthias, *Apicras*, &c., should be kept in a warm place near the glass, and should be incited to strong and early growth, in order to have the hot season to ripen in. Water regularly and rather freely.

Helichrysums will be coming into bloom; keep them near the light in an airy place, and water regularly and thoroughly, but not too often.

Leschenaultias.—Shift free growing and young plants, shading and keeping them close at first; water with great circumspection, as they are very liable to damp at this stage.

Lilium japonicum (Japan lily).—Shift if necessary, using large pots and rough compost. Water abundantly, and keep them in an airy place, where they will not be drawn.

Mignonette.—Propagate the tree variety, either by cuttings or seeds, and train them to a single stem; when potted off keep them in an airy situation; they will be found very useful in autumn and winter.

New Holland plants, as acacias, hoveas, bossiæas, &c.—Shift, if not already done, and tie up and regulate the young shoots as they advance. Water carefully but plentifully, for if the drainage is efficient no danger can well occur to healthy plants.

Orange trees.—Gradually harden those which are to be placed out of doors during summer by admitting a free circulation of air to them, and by not watering to so great an extent as would be proper for those retained under glass. The latter should be well encouraged in their growth by liquid manure, syringing, and shutting up the house rather early in the afternoon. Attend to the regulation of the head by stopping or cutting out misplaced shoots.

Oxalis.—Keep these near the glass, and in a free circulation of air, and supply them liberally with water through the flowering season, and until the leaves are matured; then gradually lessen the quantity.

Pelargoniums.—Shade those which are coming into flower; water freely, using manure-water about once a week; keep them free from insects and dirt of every sort. Those from which seed is wanted should be placed by themselves, and the flowers should be carefully guarded from bees, who will cut a hole through the unexpanded petals to reach the nectar in the flower tube, thus spoiling the flower, and most likely at the same time impregnating the stigma.

Primulas.—Keep the young plants shifted as they fill their pots; but it is better not to commence so early with them. Look to the old roots of the double varieties; put them in a cool shady place, and water carefully.

Proteas, *Banksias*, *Dryandras*, &c., should be encouraged in their growth by a good watering whenever they appear dry. It is advisable not to set them out of doors until they have nearly completed their growth, when they should be well staked, to prevent their being blown about.

Rhododendrons.—Keep them thoroughly watered while growing, and be sure that the ball is thoroughly soaked; they should have plenty of air, especially when their growth is completed, but their tender foliage should not be exposed to the direct rays of the sun.

Roses.—Guard diligently against insects; hand-pick for the "worm i' the bud," and use the usual remedies against others. Thin out the weaker branches, and stop and tie up the climbing ones where necessary.

Salvias.—Shift, and stop and tie up these, keeping them close, and shading for a few days; water freely, and keep them, when established, in a warm but airy situation.

Stapelias.—Shift, if not already done: tie up the stronger, or longer growing sorts; and expose them to the most intense light, when a little established. Water rather freely as they advance in growth.

Tropæolums.—Grow these in the most airy part of the house, and near the glass, except when in flower, when they should be shaded: they want training almost every day. Guard them carefully from slugs and snails, and also from the green cabbage caterpillar, which will sometimes commit great havoc on them: keep them rather moist than otherwise.

THE CONSERVATORY.

Temperature.—From 60 to 70 degs. by day, and about 50 degs. at night. This structure being more for the display of flowers brought forward in other houses than for the growth of them, it is requisite to keep the temperature somewhat low in proportion to the advance of the season. Shade is now indispensable, and will be in almost constant use.

Ventilation.—Give air freely, but on windy days do not open the sashes on the windward side of the house. Leave more or less air on all night.

Watering.—Be careful in applying water to the roots of plants brought from warmer houses; those from similar or colder houses will require a liberal supply. The paths should be kept as damp as can well be managed to 70 degrees as the maximum, which will be sufficient for all forcing purposes.

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Soils.—Always keep the potting-shed well supplied with the different soils, and other materials necessary, as pots, stakes, tallies, matting, &c. A great deal of time may be thus saved, especially as regards tallies, which may be made and sorted ready for use in winter, or on wet days.

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Proteas, Banksias, Dryandras, &c., should be encouraged in their growth by a good watering whenever they appear dry. It is advisable not to set them out of doors until they have nearly completed their growth, when they should be well staked, to prevent their being blown about.

Rhododendrons.—Keep them thoroughly watered while growing, and be sure that the ball is thoroughly soaked; they should have plenty of air, especially when their growth is completed, but their tender foliage should not be exposed to the direct rays of the sun.

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Stapelias.—Shift, if not already done: tie up the stronger, or longer growing sorts; and expose them to the most intense light, when a little established. Water rather freely as they advance in growth.

Tropæolums.—Grow these in the most airy part of the house, and near the glass, except when in flower, when they should be shaded: they want training almost every day. Guard them carefully from slugs and snails, and also from the green cabbage caterpillar, which will sometimes commit great havoc on them: keep them rather moist than otherwise.

THE CONSERVATORY.

Temperature.—From 60 to 70 degs. by day, and about 50 degs. at night. This structure being more for the display of flowers brought forward in other houses than for the growth of them, it is requisite to keep the temperature somewhat low in proportion to the advance of the season. Shade is now indispensable, and will be in almost constant use.

Ventilation.—Give air freely, but on windy days do not open the sashes on the windward side of the house. Leave more or less air on all night.

Watering.—Be careful in applying water to the roots of plants brought from warmer houses; those from similar or colder houses will require a liberal supply. The paths should be kept as damp as can well be managed in such a place. If any of the permanent plants require syringing, the plants in flower should be watered as little as possible.

Arrangement.—This depends so entirely on the sort of structure that but little can be said in the way of particular directions. Where the house admits, a somewhat irregular design, but not without some general agreement, is perhaps the best. Where the house and plants are small, a series of small stages or beds, to correspond with the style of the house or adjoining grounds would perhaps be more interesting; while the constant change of plants and difference of arrangement would prevent the sameness from proving monotonous.

General directions.—These are so generally applicable, that what has been said in previous months may be referred to. The necessity of neatness in every thing is obvious; even in tying, use the smallest strand of bass sufficient to the purpose to which it is applied, turn the knot away from the general point of view, and cut the ends very close to the knot.

THE PLANT STOVE.

Temperature.—From 75 to 80 degrees, occasionally higher with sun heat; at night 60 or 65 degrees.

Ventilation.—Give air as soon as the temperature begins to rise higher than necessary. Shut up early, or as soon as the heat begins to decline rapidly; avoid draughts.

Watering.—Apply moisture regularly and abundantly wherever wanted, and in whatever form; syringe night and morning, and also damp every part of the house, as the walls, pathways, &c.; always use the water about or above the temperature of the house.

Potting.—Continue to pot as the various plants require. Have a movable potting bench to take into the house; the soil should be put into the house overnight so as to be warmed. Stove plants are often seriously damaged by being taken into potting sheds.

Insects.—Keep up the war against all vermin; allow nothing to interfere with the immediate destruction of every thing injurious to the plants.

Achimenes.—Shift as often as necessary, and grow them away rapidly, keeping them near the light, to guard against their being drawn; water freely, but see that the water does not lodge about the roots.

Allamanda, *Beaumontia*, *Echites*, and other strong growing climbers should be kept tied up, and trained. Water freely unless early flowering be desirable; stop the stronger shoots occasionally. The other two mentioned may be grafted on Beaumontia.

Alpinias, *Hedychiums*, and their allies, should be kept in strong heat, abundantly supplied with water, and shifted when necessary; syringe constantly.

Aphelandras, *Justicias*, *Ruellias*, &c.—Shift as they require it, to grow them freely; syringe, and be constantly on guard for the red spider.

Amaryllids.—Keep them well supplied with water as long as the leaves continue to enlarge, and shift if necessary; or better, turn them out into a prepared pit near the glass, and take great care not to damage the foliage.

Begonias.—Grow steadily on, shifting such as require it, and removing any in flower to cooler quarters; keep a steady heat about them, and be very careful they do not want for water.

Burchellias.—Keep them growing until they appear set, by giving a liberal supply of water, and by shifting as necessary; gradually reduce both the heat and moisture as they leave off growing.

Cacti.—Excite all the tribe by liberal supplies of light, heat, air, and moisture; have the drainage efficient, and water under such conditions will soon cause a difference for the better. Cut out the old and weak shoots, and support the new ones as they advance.

Cinnamomum (Cinnamon tree), requires a large supply of heat and moisture while in a growing state; syringe frequently.

Clerodendrons.—Push them on by giving them plenty of space, and rich soil, shifting often if large plants are desirable; cut in some so as to get a second crop.

Climbers.—Keep these neatly tied up, stopping some of the lateral shoots occasionally so as to lengthen the period of flowering; watch carefully for red spider, especially if the house is lofty.

Daturas.—Grow these rapidly by large shifts, and rich soil; they are easily propagated at any time, and can also be flowered at almost any season, by checking them, which is done by transferring them to a lower temperature for a period, and then again submitting them to heat.

Erythrinas make fine plants when grown to a single stem; grow them quickly until the flower spike is a good deal advanced, and then remove them to a lower temperature. By beginning early the same plant may be flowered three times in the year.

Euphorbias.—Treat the succulent ones like the dwarf cacti, and make use of this month to forward their growth so that they may be well ripened during the summer months. The leafy kinds should also be grown freely, and some of them stopped to make them bushy.

Ferns.—Keep up a moist atmosphere by damping every part of the house, and shade the plants effectually from the sun, as few of the finer sorts can long bear the broad glare of day.

Gardenias.—Keep these plants well syringed, as the red spider is very destructive to the foliage of all the species.

Gesneras, Gloxinias, &c.—Shift as fast as they require it, and keep them near the glass in a strong heat, with a good supply of moisture; shade them from strong sunlight, and never allow them to flag from any cause.

Hippeastrums, Crinums, Pancratiums, &c. —Be careful of the foliage; give plenty of room at the root, also plenty of moisture and heat.

Hydrangeas.—Pot off any rooted cuttings, and shift those raised last summer for blooming this season; water plentifully while they are growing; and when they come into flower remove to a cooler house.

Ipomœas.—Shift the free growing kinds, and train them as may be necessary; syringe constantly to keep down the red spider.

Ixoras.—Remove such as are in flower to the conservatory, and bring the others steadily forward by shifting, and other means, as required.

Jasminums, Rondeletias, Brunfelsias.—Grow on in strong heat and a damp atmosphere; train them as they advance into the neatest shapes; any that have completed their growth should be gradually removed to a cooler place, reducing the supply of water at the same time.

Lantanas.—Remove to a cooler house as they come into flower; cut some in to keep them bushy, and to take the place of those in flower as they become straggling.

Luculia gratissima should be kept growing, shifting as requisite, and guarding against insect enemies.

Lycopodiums only require to be left to themselves in a damp shady place; they may be propagated to any extent by small pieces, and most of them also produce abundance of seeds or spores.

Malvaceous plants, as hibiscus, will, many of them, be getting almost unmanageable, but most of them flower in very small pots; keep them free from insects, to whose attacks they are very liable.

Manettias, and other tender climbers, require constant attention to regulate their shoots. See that they never suffer from drought or insects.

Melastomas.—Shift as they advance, and remove them to cooler quarters as their flower buds approach full size.

Melo Cacti.—Pot off seedlings in sandy soil as soon as they can be handled, shade them until they take root, and then treat them like the others, with occasional shade in very bright weather. Keep the old plants growing in a hot damp atmosphere.

Musas should be kept growing; and, especially if turned out, should be abundantly supplied with water, and occasionally with liquid manure; be careful not to wet the blossoms after they appear, as they are very liable to rot.

Nepenthes (Pitcher plant), keep these in the dampest and hottest part of the house, and syringe often.

Neriums, in flower, should be removed to cooler quarters; such as have flowered may be brought in again and forwarded in their growth for a second crop of blooms.

Nymphæas, (Water lilies), should be so kept on the tanks or pipes as always to receive a genial bottom heat; the water in their pans or pots should be constantly changed, and the plants kept clear of confervas and dirt.

Palms.—Attend particularly to watering at their roots; and syringe well to keep the leaves clear of dust.

Polianthes (Tuberose).—Remove such as are becoming drawn to a cooler house; reduce the supply of water a little, and give them an airy situation.

Thunbergias.—Shift, stake, and train as necessary, and remove the flowering plants to the conservatory.

Vincas grow freely, but require constant stopping to keep them bushy, and great attention to keep them free of red spider.

THE ORCHID HOUSE.

Temperature.—The warm-house from 80 to 90 degrees by day, or more by sun heat; about 70 degrees by night. The cool, or Mexican house, may range about 75 degrees, or a little more with sun heat; 65 degrees at night.

Ventilation may be pretty freely indulged in, if care be taken to avoid all strong draughts, and not to lower the temperature too much; shut up in good time in the afternoon.

Watering.—Keep a thoroughly damp atmosphere, by syringing and the use of evaporating pans; let the house be well filled with steam morning and evening; see that the soil in none of the blocks or baskets becomes dry.

Insects.—Woodlice and cockroaches are sad depredators, as are also two or three very minute snails, as well as the common snails and slugs; an incessant war must be carried on against these and no doubt many others.

Potting.—Some few may require shifting, but the majority ought to be growing fast. Many species, both East and West Indian, do well on naked blocks, even on the sawn surfaces; and their tender roots under those circumstances are not so subject to rot from stagnant moisture as when sphagnum is used about them.

Shading.—A screen composed of several folds of coarse woollen netting has been found to form a very good shading; but even stout canvas has proved too thin for the growing plants at this season; some efficient shade is indispensable.

Soils.—Sphagnum has been largely used in some places for fastening on to the blocks and in the baskets with the roots, but when used in a decayed state, it has in many cases been attended with bad results; it also affords harbour for insects. The mosses and other plants growing with Orchids in their native places appear to be most of them alive in the neighbourhood of the best roots, and must form a very different substance to dead sphagnum, many of them being *Hypnums*. Nothing is better about the blocks than growing mosses and lycopodiums.

Imported plants.—Be very cautious in the use of water until they have made a decided push; their treatment may then be gradually assimilated to that of the established ones. Carefully collect the dust and rubbish introduced with them, and sow it about in a damp corner, or among some of the plants; many new plants have been obtained by this means.

Aërides, *Saccolabiums*, and *Vandas.*—These plants should be kept in the hottest and dampest part of the house, so as to encourage a vigorous and early growth, that they may be dried off in good time before the bright sunlight of the autumn is too far gone.

Cymbidium.—This genus does best in pots in rather loamy soil: and they may now be shifted, if not previously done.

Cœlogyne.—Some of these plants make two growths in the course of the season; and those that are now going out of bloom should be grown on so as to complete their next growth early, and then have a rest.

Dendrobiums.—These should be grown on as rapidly as possible, but the supply of moisture should be shortened as soon as they show signs of maturity in the young shoots.

Oncidiums should be kept growing freely, and should be shifted from their blocks or pots if necessary, before the new roots are so far advanced as to suffer from removal.

Stanhopeas must be repotted as soon as they commence their new growth, and should be grown on freely.

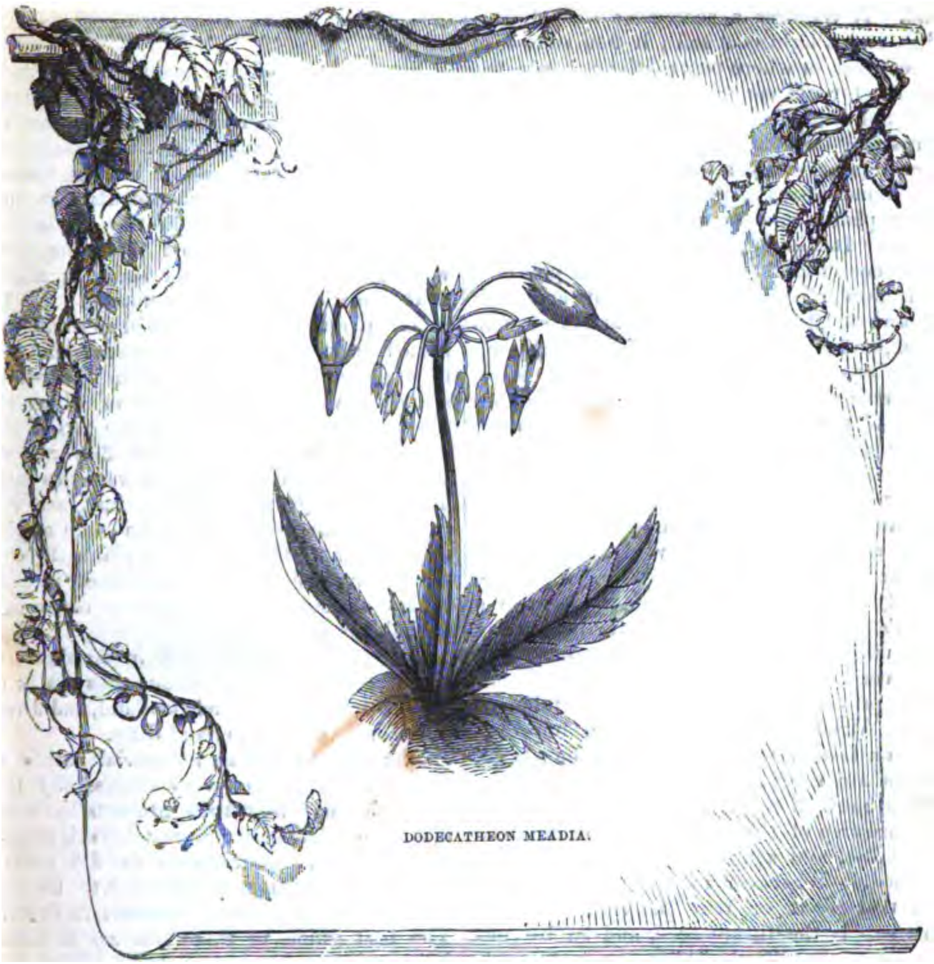
Zygopetalums require to be kept in the coolest part of the house, where the heat does not exceed 80 degrees.

MISCELLANEOUS NOTES.

Transparent Cloth.—The cheapness of glass will render this material less sought for than formerly. It will still, however, be sometimes used in covering pits, and for other temporary purposes of shelter, such as hardening off plants before planting them openly. Slight wooden frames should be made, and these covered with holland or calico, strained tight; they are then to be painted over with a mixture of four ounces white resin, one ounce of sugar of lead, and three pints of pale linseed oil, the sugar of lead being ground up with a small quantity, and then applied to the remainder, and the resin incorporated with the oil by the aid of a gentle heat. The composition is to be laid on with a brush; and one coating annually is sufficient. This makes it both transparent and waterproof.

Thrips are very troublesome little insects—in hothouses at any season, and even outdoors in summer—where plants are subjected to a hot arid atmosphere. A genial moisture is the great remedial resource; but when they are numerous, it is best to paint the flues or pipes, if indoors, or the walls, if outdoors, with sulphur vivum, mixed with water: the flues must be done when they are cold; the heat either of the fire or the sun gives rise to fumes which destroy the insects. The plants—particularly the under side of the leaves—may also be frequently syringed with water in which sulphur is mixed.

Docks and Dandelions, and other perennial thick-rooted weeds which sometimes occur in lawns, particularly when newly formed, may be got rid of by continually cutting off their leaves; this must, however, be done each time *as soon as they spring up*. No plant can long survive a continuance of this treatment.


DODECATHEON MEADIA.

THE AMERICAN COWSLIP.

THE American, or, as it is sometimes called, the Virginian Cowslip (*Dodecatheon Meadia*), is a hardy spring flowering perennial, in which character alone it claims attention, spring flowers being always welcomed. It, however, deserves consideration also for its intrinsic beauty, and is, besides, a very eligible plant to reward the attention of the florist; that is, it might be altered and varied by hybridizing, as other florist's flowers have been.

It is a perennial plant; in winter, circumscribed within the hybernacula or store-bud, formed just below the surface of the soil, and in early spring pushing out a tuft of broadly and largish lance-shaped leaves, which are coarsely saw edged; from among these leaves arises the upright flower stem, growing from eight to twelve inches high, and bearing at top an umbel of gracefully pendent flowers, usually twelve together; the petals of the flower are of a rosy lilac colour, reflexed or turned back over the calyx, giving the appearance of a half-expanded parasol, which resemblance is considerably heightened by the long tapering shape of the parts of fructification. The pollen grains of this flower, when examined with the assistance of a compound microscope, are seen to be peculiarly beautiful; they are distinctly organized minute pearls, so minute that one square inch will contain of them upwards of three millions; and as squares cannot be covered by circles, more than one-fifth of the space will still be left unoccupied. The plant flowers at the end of April and beginning of May. It grows in several parts of North America, and was first sent from Virginia by Banister, to Bishop Compton, in 1704, after which the plant was lost for several years in England, till it was again obtained from America by Mr. Catesby, about 1744.

The culture of this plant is of the simplest kind. It requires a somewhat shaded situation, and a light cool soil; it flourishes well in peat soil, or where peat earth predominates. The chief requirements are coolness in summer, and shade from intense sun heat. Young plants may be obtained by dividing the root, when there are offsets to take away; this is best done about August, which gives the young plants time to get established before winter. It also ripens seeds, which should be sown soon after they ripen, either in pots or a shady border; if these young plants are much exposed to the sun, they are almost sure to perish, so impatient are they of heat. Young plants are often lost through their being planted in dry soil in a sunny part of the garden. If the seeds are sown in autumn the young plants may be removed to the borders where they are to remain by the autumn following.

Some seedlings of increased size, superior form, and affording variety of colour, have already been obtained. Why, therefore, should not the American cowslip become a florist's flower, and afford a still further variety of beautiful forms? The same principles of improvements which have, in so many other cases, proved successful, must be followed here. What would constitute an improvement on the present flowers must be settled, and as any seedling approaches the standard of ideal perfection, this must be regarded as one sure step of the journey, and should lead to another, and again another, till the end is attained. Wherever improvement is manifest, that plant or that individual blossom must supply the future seed, and so by continually sowing the seed of those which manifest any degree of improvement over the previous races, a very considerable and permanent change for the better—or, at least, an advance towards the ideal perfection—will be wrought. We have qualified the expression, "change for the better," because it might be the class of florists alone who would so regard it. The flower is in its present state beautiful and perfect in the estimation of the lovers of simple nature.

Of the more distinct garden varieties which have been raised, the following may be noticed: — *albiflorum*, with white blossoms; *elegans*, rosy-coloured, deeper than the original plant; *giganteum*, lilac, with an increase of size; and *lilacinum*, which also bears lilac flowers. Another species called *Dodecatheon integrifolium*, which bears light purple flowers, is also in our gardens, having been introduced from North America in 1829.

The American cowslips belong to the same natural family—Primulaceæ—as our common primroses and cowslips.

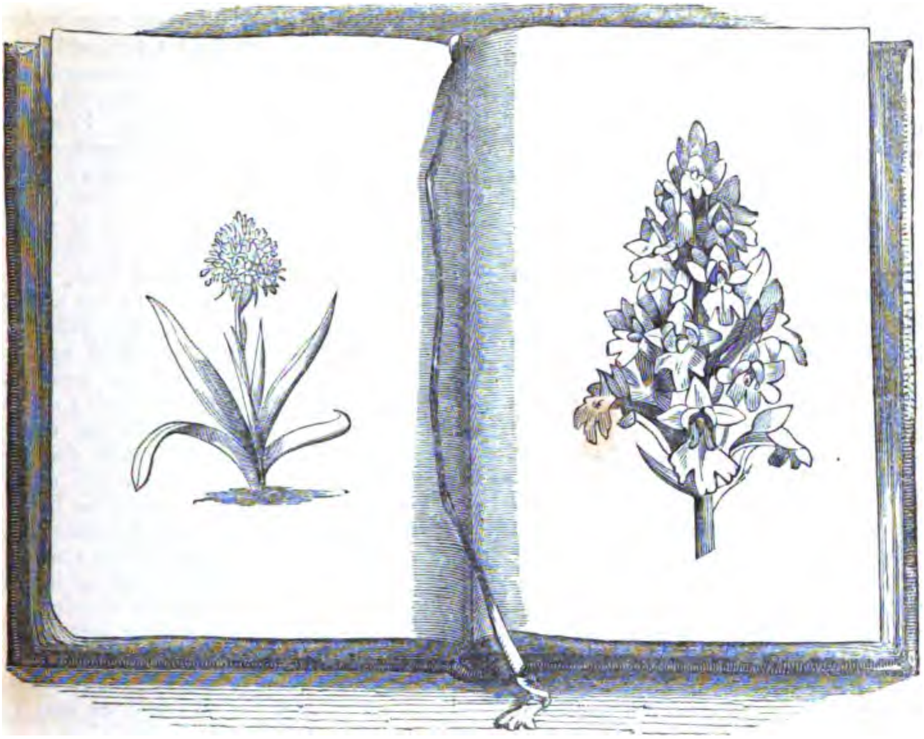
ANACAMPTIS PYRAMIDALIS.

This is one of the pretty little English Orchids which are sometimes seen cultivated in pots, and which deserve to have a permanent place in our gardens. It is sometimes called *Orchis pyramidalis*, having formerly borne that name; but most modern botanists see cause to station it in the genus Anacamptis, which is named from the Greek word *anakampto*, to bend back, in allusion to the position of its pollen masses.

The plant may be described as a tuberous-rooted perennial, producing a stem from twelve to eighteen inches high, with linear-lance-shaped leaves, from the centre of which rises the flower stem, bearing at the top a large broadly-ovate close spike of flowers, of a delicate rose colour, in some varieties white. The tubers grow in pairs, and are of a roundish ovate, or oblong form; one of these tubers is that of the growing plant, the other the young one forming to succeed it. The tubers of some allied species of orchids, furnish the article salep.

A. pyramidalis is found in meadows and pastures, chiefly in calcareous soils; it is met with both in England and Scotland, and flowers in the months of June and July.

The culture of the terrestrial native Orchises has never been very successfully practised, although numerous attempts have been made. Under these circumstances, it seems to offer peculiar inducements to the amateur cultivator, to whom a difficulty to be overcome offers merely an incitement to exertion. The best guide in these matters is nature. What can we learn from her? In the first place the plant grows most commonly—not exclusively, for Hooker records it as growing also in clayey soil—in calcareous soils, that is soils of a chalky character. In most places it is not difficult to obtain such soils to plant them in; and where it is least convenient, the requisite can be imparted by mixing pounded or broken chalk, and effete lime with a portion of pure loam. Again, they grow in meadows and pastures, and, therefore, do not require shade; but it must also be recollected that the surface of the soil in such places is covered with a mantle of verdure, which, though it does not shade the growing plant, acts in a peculiar way in sheltering the roots while in a dormant state, and the probability is that much advantage is derived in the shape of protection from excessive heat, while they are dormant in the latter part of the summer. Whenever they are cultivated in the garden, it would, therefore, seem desirable to secure them a calcareous soil, and also to cover the surface of the bed with turf like a lawn. A portion of the lawn might be prepared and



planted in this way, and the space protected in early spring from the scythe ; and in no situation could they seem to be more appropriately placed.

It is surprising that more attention has not been paid to the growth of this, and other orchids in pots after the manner that hyacinths are grown ; for such a course of treatment they are well adapted, and, at least, all the more vigorous ones will grow readily. The present subject may be ranked among these latter. The plants should be taken up from their wild habitats when in flower, as they can then be better known, and transferred to a pot, without at all disturbing their roots. If they are thus removed just as they begin flowering, the blooms will then be available for ornament. After flowering, set them in a sheltered place out of doors, and attend well to watering them so that the leaves may be well perfected ; allow them to die away gradually, at the same time becoming partially dry ; and in winter set the pots in a *dry* cool frame, the soil being in a medium state of dampness. As spring comes on give them water, and in due time they will make their appearance, and flower, when the same course must be repeated. Or they may be accelerated by removal to a warmer situation if that be desirable. A good soil for them in pots is equal parts loam and peat, mixed with a portion of sand, some lumps of chalk and charcoal being mixed in at the time of potting. Re-potting may be done in the spring, just as their growth is perceived. The singular structure of these flowers should recommend them to especial notice.

CONTEMPORARY WRITINGS

AND ORIGINAL NOTES, CONNECTED WITH HORTICULTURE AND NATURAL HISTORY.

The Ranunculus ; how to grow it.[*] In the excellent pamphlet recently published by Messrs. Tyso, than whom few have been more successful in the growth of this flower, we find the following judicious remarks on soils and manures:—" The foundation of all good culture, is the adaptation of the compost to the natural habitats of the plants. Experience teaches that the Ranunculus delights in a rich hazelly loam. If, therefore, the natural soil of the garden be unfavourable, procure the top spit of a pasture of rather heavy and tenacious but not clayey qualities, with the turf, and lay it in a ridge some months, and turn it two or three times before use. To give precise and accurate directions in print for selecting a suitable soil is difficult, but it is deserving of remark, that a pasture abounding with, and luxuriantly sustaining the British varieties of the Ranunculus or Butter-cups, as they are usually called, has also been found congenial to the Asiatic species. The addition of fertilizing agents to maiden soil, is of paramount importance. Many composts have been recommended, the proportionate ingredients of which have been prescribed with the precision of a physician's formula. The secret of vigorous foliage and enormous blooms, has been a mixture of powerful chemical stimulants, or a substratum of cow-dung *a foot thick*, or some other equally unnatural process! Our advice is to avoid quackery. Many valuable collections have been ruined by *excessive* applications of suitable manures, or the use of such as are destructive rather than nutritive. Decayed stable and cow-dung in equal quantities, constituting together about one-third, added to two-thirds of loam, will, when mixed and thoroughly incorporated, form a compost for the main depth of the bed; reserving a portion of loam sufficient to make a top layer of soil two inches deep, to which about half the above stated proportions of well-decomposed manure, may be added. It is of importance that the tubers should not be placed in contact with *fresh* manure, as it engenders disease in the roots, and consequent injury to the soils."

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[*] "The Ranunculus; how to grow it:" By Tyso and Son, Florists, Wallingford. London: Jackson and Walford, St. Paul's Churchyard. 1847.

OUT-OF-DOOR GRAPE VINES.*—Under the title quoted below, a small pamphlet made its appearance during the last year, the object of which was to demonstrate that vines on open walls are very generally pruned and managed on erroneous principles. We recommend the book, which is quaintly but forcibly written, to the attention of those who feel interested in out-door vine culture; and for the sake of illustration transcribe what is said of the relative fruit bearing capacity of a series of buds along a vigorous shoot. An engraving is given, part of which is supposed to represent a "strong and well ripened shoot of 1845, (say shoot of the white muscadine, a prolific bearer much cultivated in England, and one of the best out-door vines for that climate,) pruned down to about 18 or 20 buds, and exhibiting its crop of fruit therefrom." The shoot here alluded to is represented as being trained in an ascending serpentine form. "The order in which strong well-ripened and otherwise proper shoots, left with so many joints, seem disposed to bear, may be detailed as follows:—From the 1st, 2nd, and 3rd buds thereof, there will seldom proceed a shoot. If the 3rd does shoot its produce will probably be but one large bunch. From each of the 4th, 5th, and 6th buds two perfect bunches may be expected; from each of the 7th, 8th, and 9th, three such bunches; from the 10th, four such bunches; from each of the 11th, 12th, and 13th, three such bunches; from each of the 14th, 15th, and 16th, two such bunches; from each of the two or more buds next thereto, one such bunch followed by an imperfect bunch; after which one imperfect bunch only may be found produced by two or three of the next buds; and then nothing but tendrils should be expected. The gradual increase and then decrease of the number of bunches (in which sense the word 'order' is here intended to be taken) the writer hereof does not recollect to have seen previously attributed to the vine in any treatise thereon. But, (though he is writing on a retrospection of his own observations as a pruner, made for the greater part more than a quarter of a century ago—writing, through being in his old age, and almost as oft as he happens to ramble on foot here and there, compelled as it were to see before him the unwelcome proofs of very many Londoners, not enjoying the rich feasts from their own vines which they might easily, without incurring any greater expense than what they are now at in debarring themselves and friends from those feasts, as well as exposing their inexpertness to the prying eyes and sneers of judicious pruners passing by,) he feels satisfied that the order and number of bunches here set down as producible, will be found nearly correct. It is not, indeed, meant to be contended, that there is never a variation of the said order and number on like shoots under like circumstances. Neither, granting the probable produce stated, not to be above the mark, may it be always, or ever, fit to allow so many bunches to remain for ripening on each shoot. One rule almost always adopted by the writer, was to cut away the upper shoots down to where two perfect bunches on each shoot commenced. In leaving for bearing 16, 18, or 20 joints, it requires some skill to make each bud push; *i. e.* each bud beyond the 1st, 2nd, and 3rd lowest ones, seldom observed to push in such long wood. The way adopted by the writer has been to top the shoot from the upper bud, one joint above the last embryo bunch, so soon as he could safely effect the same by finger-nails, points of scizzors, &c.; and this can often be effected easily when the shoot altogether, be the embryo bunches thereon one or two, has not advanced more than a couple of inches:

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* A few observations on the mismanagement and consequent barrenness of numerous out-of-door grapevines, in and about London; and on the means likely to restore many to a state of fruitfulness. By F. N. London: T. Cazaly, Tottenham Court Road. 1846.

giving when there is going to be a produce of three or four bunches, time for a few inches of further extension. The progress of the sap upwards being thus stopped will be found to influence quickly several of the buds below; but the 2nd upper one will soon so take the lead as to threaten to impoverish the rest, and must therefore be treated like the upper one; and similar thereto should be the treatment of all the remaining buds down to that from which it may be thought fit to train a succession shoot untopped."

COTTAGE-GARDEN SOCIETIES.—It has been proposed, as likely to be advantageous to the labouring classes, that societies for the encouragment of cottage gardening should be formed by the higher class of inhabitants, in every village. These societies are to point out to the poor, the most profitable crops for allotment cultivation, and to supply the place of the now uncertain potato; to give them necessary instructions as to their management; to offer prizes for the best productions; and also for the best principle of cropping and cultivating their gardens. It is proposed that such societies should at once issue such rules and regulations as may be necessary; and further, that by the aid of the wealthy they should distribute such seeds, roots, &c., as may be necessary for stocking the ground, and by the aid of practical members the necessary instructions and advice as to the mode of cultivation. The parsnip is very highly recommended for all purposes; then the carrot, the Swedish turnip, and the beet-root. Onions and leeks are considered to be desirable; and good varieties of cabbages, kales, and Savoys, should always be largely planted by the poor.

TIGRIDIAS.—The two species of Tigridia, *pavonia* and *conchiflora*, make fine beds in the flower-garden in sheltered situations, notwithstanding the ephemeral nature of their blossoms, which individually last but one day: the succession in which they are produced counterbalances this objection. They may be planted, early in March, in pots of peat and sandy loam, and forwarded in a warm frame, being hardened off subsequently to planting them out in May; or they may be planted at once into the beds towards the end of March or beginning of April, the soil being in good friable condition, filling up round about the roots at planting time with sandy peat. In the autumn, it is an advantage to cover the surface of the beds six inches thick with litter, to keep the frost from killing the stems too low down. In November they may be taken up and stored among perfectly dry soil, and examined once or twice during winter.

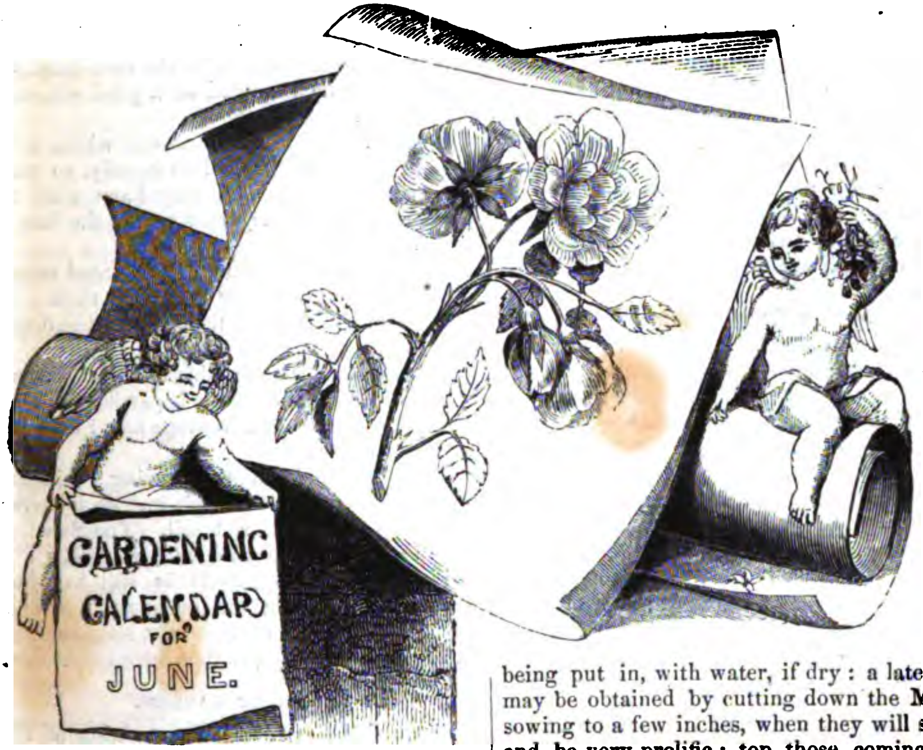
CALCEOLARIAS—TO INCREASE RAPIDLY.—When the plants have made young shoots of three or four joints in length, after flowering, take off these, and cut them up in this manner:—Separate each shoot, in the middle of the lowest internode, that is the space between one pair of leaves and another; repeat this at the other internodes, as many as they may be. Each shoot taken from the plant will thus be divided into three, four, or more pieces, according to the numbers of pairs of leaves it had when whole; and each division will consist of a pair of opposite leaves, and portion of stem—from half an inch to an inch, according to circumstances—on each side of these leaves. Each of these pieces is then to be slit down the middle, so as to separate the two leaves, each having half the thickness of the portion of stem attached to it: the extreme top, which will be too small to split asunder in this way, may be slit from below upwards just through the joint, and planted in this state. These are the cuttings. A shoot having three pairs of leaves and the tip will thus form seven cuttings; and as the tip may be pulled asunder afterwards, there will, in fact, be eight cuttings from such a shoot as is usually put in to form one plant. The cuttings are planted thus:—convenient sized pots are filled with sandy soil, made from very turfy peat rubbed through a half-inch sieve, and mixed with equal parts of silver sand; these pots must be well drained, and the soil covered with a half-inch layer of pure sand. One row of cuttings—not more, or they are liable to damp off—is planted round the margin of the pot, the leaf being set towards the centre, and the split part of the stem close to the pot: the leaf must on no account be injured, as the life of the cutting depends on it. The bud at the base of the leaf is to be set, in planting them, just below the surface; and the cutting must be made quite firm, by pressing the soil against it and the pot: the leaves must not touch, or they will be liable to rot. A close warm frame is necessary for them, and they must of course be shaded. They usually root well; and in due time, when roots enough are formed, must be separated, and potted singly: the plant is formed from the bud at the base of the leaf. The tips, which were to be cut, but not separated before planting, are to be separated after they are rooted, at the time of planting. This mode is adopted for the extensive increase of particular kinds; where such increase is not desired, of course ordinary cuttings are preferable and less troublesome.

MANETTIA BICOLOR.—Where there is the advantage of stove-heat, the elegant orange and scarlet blossoms of this graceful climbing plant may be had in profusion for two or three months during the dull period of winter. To attain this, cuttings should be procured as soon as possible in the spring, and struck in a moist heat: as soon as they are well rooted, they should be potted into four-inch pots, in some light rich sandy soil, and potted successively as they require it. They must be kept growing in a moist house or frame, as near the glass as possible, to cause them to grow short-jointed and vigorous; and at the last potting, about the end of July, they must have pots large enough to suit the trellis they are to be trained on, which may be of any shape, but none is better than a cylinder of two and a half or three feet high, and a foot in diameter, turned outwards at top. Always use the soil in a sweet healthy state, and as rough as circumstances will admit of: let it consist of rich loam and peat, a little cow-dung in a well decomposed state, with a liberal admixture of sand; have plenty of charcoal mixed with the drainage. If these simple rules are adhered to, the result will amply repay the trouble.

THE DOUBLE YELLOW ROSE.—The following passages from old books, relating to this flower, which it puzzles everybody to grow well, are interesting:—"Whereas all other roses are best natural, this is best inoculated upon another stock. Others thrive and bear best in the sun; this, in the shade: therefore, the best way that I know to cause this rose to bring forth fair and kindly flowers, is performed after this manner. First, in the stock of a Francfort rose, near the ground, put in the bud of the single yellow rose, which will quickly shoot to a good length; then, half a yard higher than the place where the same was budded, put into it a bud of the double yellow rose, which growing, the suckers must be kept from the root, and all the buds rubbed off, except those of the kind desired, which, being grown big enough to bear (which will be in two years), it must in winter be pruned very near, cutting off all the small shoots, and only leaving the biggest, cutting off the tops of them also, as far as they are small. Then in the spring, when the buds for leaves come forth, rub off the smallest of them, leaving only some few of the biggest, which, by reason of the strength of the stock, affordeth more nourishment than any other, and the agreeable nature of the single yellow rose, from whence it is immediately nourished, the shoots will be strong and able to bear out the flowers, if they be not too many, which may be prevented by nipping off the smallest buds for flowers. The tree should stand something shadowed, and not too much in the heat of the sun, and in a standard by itself, rather than under a wall." That which follows is from a book called *Systema Horticulturæ*, dated 1688:—"There is no flower-bearing tree that yields blossom so beautiful as the rose, whereof the yellow Provence rose is the most beautiful where it brings forth fair and kindly flowers, which hath been obtained by budding a single yellow rose on the stock of a flourishing Francfort rose near the ground: when that single yellow is well grown in that branch, inoculate your double yellow rose; then cut off all suckers and shoots from the first and second, leaving only your last, which must be pruned very near, leaving but few buds, which will have the more nourishment, and yield the fairer and more entire blossoms. This tree, or a layer from a rose of the same kind, delights most, and blows fairest, in a cold, moist, and shady place, and not against a hot wall."

GOOSEBERRY CATERPILLARS.—These troublesome larvæ may be destroyed by the use of the white hellebore (*Veratrum album*). It may be applied either in powder or in decoction. A pound weight of the roots of the hellebore infused in a gallon of water, a good handful of elder-tops being added, will form a suitable liquid for application in that form: it is to be applied with a syringe sharply to the trees, so as to wet every part, the under side of the leaves as well as the upper; in fact, the insects are usually found most numerous on the under side of the leaves and branches. The infusion is to be made with hot water, and applied when cold. Where the powder is used, it is applied to the parts of the trees with a puff or fine dredge: it should be very finely ground, and quite dry, and in that case the puff disperses it most economically.

BEGONIA INCARNATA.—This desirable species will, under proper treatment, furnish a supply of flowers from the middle of November till April, in a temperature of from 50 to 55 degrees. Take cuttings of the strongest shoots about the beginning of April, and plant them in peat and sand, and plunge them in a frame where there is a moist bottom heat of 80 degs. In about three weeks they will be rooted, and are then to be potted into small pots in peat, silver sand, and charcoal, and returned to the frame, where they are to be grown during summer, keeping them shifted as they require, so that by the end of August they may be in eight-inch pots: at the two last shiftings add a little chopped turf and leaf mould, and also then afterward use a little weak manure water. Whilst kept in the frame in a moist heat, they must have plenty of air. Top any of the shoots that grow straggling and spoil the symmetry of the plant. When their growth is completed, remove them to a cooler place to harden. In October introduce them to the stove, and in about a month they will show flower. They are best raised annually from cuttings, which may be selected from the vigorous young shoots.



THE KITCHEN GARDEN.

Sow beans, borecole, brocoli, cabbages, cauliflowers, celery, cress, endive, kidney-beans, lettuces, parsley, peas, radishes, spinach, and turnips.

Plant and Transplant asparagus, basil, beet, borecoles, brocoli, cabbages, capsicums, cardoons, cauliflowers, celery, herbs, leeks, lettuces, onions, potatoes, savoys, turnips, and vegetable marrow.

General Directions.—Finish the preparation of the ground for, and proceed with, the planting of the winter crops. Prick out, thin, clean and hoe amongst advancing crops. Water all transplanted crops; choose dull and showery weather for transplanting. Use quick lime and salt to prevent and kill slugs, &c., and entrap them with seeds, cabbage leaves, flat pieces of board, &c.

Asparagus.—Many prefer this month for planting it from the seed bed; water the bed before raising the plants: clean the old established beds, and water them with salted rain water, in the proportion of two ounces of salt to a gallon.

Basil may still be planted out in a warm spot; that in pots, when coming into flower, should be cut and hung up, or laid out in a dry place for preserving.

Beans.—Make another sowing if much in demand, soaking the rows, or the seed before being put in, with water, if dry: a late crop may be obtained by cutting down the March sowing to a few inches, when they will shoot, and be very prolific; top those coming into bloom.

Beet.—Thin out the plants as soon as the crops are fairly advanced; nothing is gained by deferring the operation too long.

Borecole.—Put in the main planting; after early potatoes will do, and at twenty inches apart.

Brocoli.—Plant out a main crop about the end of the month, two feet apart, and in quincunx order. Prick out abundantly; make another sowing for the spring supply.

Brussels Sprouts.—Plant out a full crop; they may be put at eighteen or twenty inches apart, as they do not spread much at top.

Cabbages.—Sow about the middle of the month, for coleworts; plant out a few more.

Capsicums may still be planted out against a south or west wall; they should be nailed up or slightly protected.

Carrots.—Thin out to the proper distances, if not already done.

Cardoons.—Plant out carefully, and give them a thorough watering; a trench a foot wide and ten inches deep, well manured, will suit them.

Cauliflowers.—Sow immediately for the autumn cutting, if not done; prick out those to be transplanted next month. Where they are coming too fast for use, break down some of the centre leaves, so as to cover the head, or flower; or they may be cut and put in a cool place. Water the seed and pricked out beds, also those planted out, if the weather is very dry.

Celery.—Continue to prick out in a rich, warm, and shaded place, and water with weak liquid manure. Prepare and plant additional trenches, lifting and planting with a trowel. Broad trenches in which five or more rows can be planted are often formed where large quantities are required; but it is never so good as when in single or double rows.

Cress.—Sow twice this month in a shady situation; or if exposed, give water, and shade with a mat.

Endive.—Sow for the permanent crop the middle of this month in an open and warm situation, and upon a rich and mellow soil; the seed must be slightly raked in, and watered occasionally if dry weather prevails.

Garlic.—If the early plantings are getting ripe, take up the roots, and have them carefully dried in the sun before tying them in bunches for storing.

Herbs of all kinds, as sage, savory, &c., must be thinned according to their respective heights and manner of growth; most of them will also transplant if carefully managed and well watered. The best season for gathering them to dry, is just as they are coming into bloom.

Kidney Beans.—Make successional plantings every three weeks, until August. Put stakes to the scarlet runners and other tall growers; keep hoeing and cleaning them.

Leeks can still be put in; they require a very rich soil, and to be merely *laid in* the hole made by the dibble, when planted.

Lettuce.—Sow for succession. Also thin out and plant a few more in any spare place; hoe and water them well.

Onions.—A few may be sown if required for salads. Stake those retained for seed; look to those that were winter sown, and take up when ripe, that is, when the haulm breaks down, and turns yellow.

Parsnips.—Thin out, if not already done, to the proper distances; do not defer the operation too long.

Parsley.—The present month is a good time to sow; it is always much in demand. Thin and transplant the early sowing.

Peas.—Make two sowings, choosing for the last to put in an early sort, and upon a warm spot; support those coming on according to their manner of growth, either by stakes or string; top them when at a foot high, and again when at three feet. Give thorough waterings; a weak solution of nitrate of soda benefits amazingly.

Potatoes.—Frequently hoe, and keep a healthy surface amongst the early crops; do not earth up too heavily.

Radishes.—Sow amongst any of the small seeds, to be drawn early; yet to have them in a bed by themselves is preferable; they should be in a moist situation.

Savoys.—Plant out from the seed-beds, at about twenty inches apart, on a good soil, and water them.

Seakale.—Thin out the crowns where they have grown too thick, and do it early, so that the buds which are left may have time to become strong and vigorous before the leaves decay.

Shallots.—Take up the early planted crops, if the tops are turning yellow; dry them well in the sun, and then tie them in small bunches for storing.

Spinach.—Sow again this month, in broad bottomed drills. If this crop is partially shaded by others, it is no disadvantage now; thin out advancing crops.

Turnips.—Make another sowing; thin out those which are large enough, and do it early; give them a fine and rich soil. The Swedish turnip may yet be planted with success.

Vegetable Marrows.—It is still in good time either to plant out or sow; let it be under a hand-light on rich light soil, such as an old hotbed; they are then sure to succeed.

THE FRUIT GARDEN.

General Directions.—The training of the trees—particularly young ones—is now an important operation; as also is the thinning of the shoots and fruit; protect the early fruits from birds; destroy insects, and prevent their ravages by fumigating, syringing, dusting the trees with brown snuff and sulphur, &c., all of which will be severally necessary; also examine the crevices of the walls for snails, grubs, &c. Do not overcrop the wall-tree borders.

Apples.—The young wood as well as fruit of standards, and trellis, and wall trees, should be thinned; this may now be successfully performed. Both old and young trees which have been transplanted, should be mulched and well watered. Tie up, or nail the young shoots of grafts and trees, taking care not to fasten either too tight: remove all suckers and shoots below the grafts.

Apricots.—The fruit and shoots may now be thinned with freedom, but it must be done still by degrees; pin in the young wood, and nail in the shoots at the extremities. Two fruits to a square foot is a fair crop; and to leave the well-placed backmost buds or shoots will often be found more than a sufficient supply of young wood.

Cherries.—Give a final dressing, and prepare to protect the fruit by netting. Forked sticks, eighteen inches long, will be necessary against the walls to keep the netting from pressing against the trees.

Currants, when wanted large, should now be thinned, and a little liquid manure given.

Figs.—Continue to thin and to pinch off the points of the young shoots when from six to nine inches long, and so induce the tree to form spurs, and make moderate growth.

Filberts.—Rub off and remove all suckers at their first appearance.

Gooseberries.—Those required for tarts may be taken by way of thinning; those required fine must be now assisted by thinning, and a little liquid manure is also beneficial.

Nectarines.—If the trees are in excellent health, thin the fruit to about two or three to the square foot, and thin the young shoots to about five or six inches apart; pin and nail in as required.

Peaches.—Treat as the nectarine exactly; remove all the rampant and crude shoots, or, if the wood is thin, top them to produce other shoots to fill up.

Pears.—Go over the grafts, and support any that need it; remove all suckers. For those kinds which bear best on the young wood, provision must now be made by laying in a proper supply.

Plums.—Thin the young shoots, and also the fruit where too thick upon the trees; thin especially where it is in bunches.

Raspberries.—See that they are securely staked and tied; and thin out the suckers to four or five.

Strawberries.—The runners of the good sorts must now be secured, potting them just where they are, without yet cutting the runner; mulch and water the plants: netting to protect the ripe fruit from the birds must be seen to soon.

Vines.—Shorten every shoot to the first or second joint above the bunch, and only allow one bunch to a shoot; as soon as they are set, give them a moderate thinning.

THE FORCING GARDEN.

General Directions.—Where the fruit is colouring and nearly ripe, give air plentifully, and withhold water. The water must be gradually withheld from those later fruits which are about to colour. The very late crops must yet have abundant moisture, and air admitted with caution. The keeping down of insects, and if possible *preventing* them, is a "standing order."

Apricots.—Temperature, from 70 to 80 degrees by day, and 55 degrees at night. Give no water, and have air on night and day. Nets or mats may be hung below the trees to prevent the falling fruits from being bruised.

Cherries.—Temperature, from 65 to 70 degrees by day, and 55 degrees at night. As soon as the house is cleared, give the trees a thorough syringing, and the sashes may be taken off. Those in pots may be set out in a good situation, and the pots slightly plunged or covered.

Cucumbers.—Temperature, from 70 to 90 degs. by day, and 65 degs. at night. The exhausted plants may be cut back, and the soil renewed, and another good crop may be then expected; or for late crops plant out those raised from seeds, cuttings, or layers: shut up early; fumigate to destroy aphides.

Figs.—Temperature, 70 degs. by day, and 60 degs. by night. Gather the fruit in the morning, handling it very gently, and lay it in a cool place. Liquid manure may be given to those growing; also syringe them, and attend to stopping the young shoots.

Kidney Beans.—Temperature, from 70 to 80 degs. by day, and 65 degs. by night. Maintain a moist atmosphere, without which it is impossible to keep them clean; stake up those inclined to run, and allow no old pods to remain.

Melons.—Temperature, from 70 degs. to 90 degs. by day, and 70 degs. at night. They will be found to grow in much less heat, but not so advantageously: thin and impregnate the late crops; maintain a moist heat, especially to those in a growing state.

Mushrooms.—Temperature, 60 degs. If the beds are covered with hay, it is well to have it renewed occasionally; the non-application of fire heat renders watering almost unnecessary, yet the giving of air makes a little sometimes requisite.

Musas.—Temperature, from 80 to 90 degs. by day, and from 70 to 80 degs. at night. Continue to maintain a moist heat; the suckers should be allowed to remain after the fruit and old stock are cut: each forms a distinct plant, when separated; proceed as before.

Nectarines.—Temperature, from 70 to 80 degs. by day, and from 50 to 60 degs. at night. Give no water, and admit air night and day. Where the fruit is gathered, give a good syringing: some shut up their houses when cleared, to ripen the wood, but at this season it is quite unnecessary. The late crops will require unceasing attention to thinning, disbudding, and tying in; thin out the fruit to two and three for every square foot.

Peaches.—Temperature, from 70 to 80 degs. by day, and 55 degs. at night. Provide against the falling of the fruit when ripe by putting up nets or mats, or strewing the bottom of the border with moss or any soft material: use no water after the fruit changes colour.

Pine Apples.—Temperature, from 75 to 80 degs. by day, and about 70 degs. at night. Have the bottom heat from 80 to 90 degs. If the plants are far from the glass, no shading is requisite, but if near, which is better, give a slight shading in very bright weather; a little air may be left on at night.

Vinery.—Temperature, from 75 to 85 degs. by day, and from 65 to 70 degs. by night. Very little fire heat is necessary now, unless the fruit is wanted early; gradually lessen the watering to those colouring, and air a little at night, if mild: sponge over the leaves if red spider appears. The late houses must receive no check; and those which are cleared must be thoroughly ventilated.

FLOWER GARDEN AND SHRUBBERY.

Sow for succession a few of the most showy annuals; biennials, and perennials to plant out in spring, may yet be sown.

Plant and Transplant all annuals, half hardy, and greenhouse plants, that are worthy of attention.

General Directions.—Mow, sweep, and roll lawns; dress and clean borders and walks; stake and peg plants as required; and if dry weather prevails, give all transplanted things, especially dahlias, good soakings of water. Keep in reserve a few annuals and other plants to fill up the vacancies which are certain to occur. The taking up of bulbs, and the shortening of the luxuriant shoots of shrubs, &c., and cutting all dead flower stalks, must also be attended to.

Auriculas.—Those which are being kept for seed will be the better for sun, but all others must be put in a shady situation, and the pots plunged in sand, coal ashes, or sawdust: if a frame can be spared, it is an advantage to have them protected from heavy rains.

Annuals.—Lose no time in thinning out, and place about them sturdy twigs to support them: reserve a few in pots to succeed the early bulbs.

Anemones.—Those planted in February should now be copiously watered, and shaded from the mid-day sun: those past bloom must be taken up so soon as the foliage turns yellow; dry them in the shade; afterwards clean and store them away in boxes.

Calceolarias may all be safely planted out; the shrubby sorts look well either in masses or as single specimens; the seedling and old plants of the herbaceous kinds are best in beds; and all are the better of a little peat: if they are at all infested with insects, it will be well to fumigate them before being put out.

Campanulas, such as *C. pyramidalis,* must be timely staked, and will be improved by a watering of weak clear liquid manure. Such kinds as *C. garganica,* should be prepared for the edges of baskets, &c.

Carnations.—Place those in pots on stands in water; or be very careful of earwigs: look for the wireworm at the root of the plant: thin the flower stems to the strongest, and gently syringe them if there are no refreshing showers; begin propagating by the end of the month: treat the flowers as explained under *Pinks* and *Picotees.*

Chrysanthemums.—Top those required to be dwarf, and give liberal waterings with liquid manure.

Colchicums may now be increased by lifting and dividing the bulbs; they are nothing the better for being moved, and should be planted again immediately.

Crocus.—When the leaves appear to wither, it is time to take them up; attend to drying them before cleaning and storing them. The autumnal kinds may now be increased by lifting, but none are any the better for being often moved; plant them again at once.

Dahlias may now be with safety planted out: some prefer putting in the stake before making the pit for the plant; this is immaterial, but attend to tying them at once, and not too tight: destroy the earwigs and vermin as fast as possible; for this end, use reeds, or bean stalks, and put on the stakes inverted flowerpots, with a little moss at the bottom, &c., which look over daily; liquid manure will benefit the plants when they are growing freely.

Fuchsias may have liquid manure once a week; stake and tie them out to suit their various positions. Those trained to one stem should have the side shoots topped, to thicken the side branches and assist the leader.

Lobelias.—When the strong growing sorts, as *L. fulgens* and *ignea,* have commenced growing freely, water liberally with liquid manure, and keep them damp. The *L. gracilis* is one of the best for vases, baskets, &c., inasmuch as few of the others grow so rapidly.

Pansies.—Continue to propagate these; when a bed of them has nearly passed its best, the plants should be cut close over, and have a top-dressing of fresh soil, when they will flower again beautifully in autumn; shade those in good condition; and water all over freely in the evening.

Petunias look well on banks closely pegged down; they also do in masses, staked up in the centre, and pegged around the edge; have respect to the proper mixing of the colours.

Pinks.—Reduce the stems to one, and the buds to three; as they swell, tie a piece of matting or worsted round the middle of the bud, and place a round piece of card with a hole in the centre, to form as it were a resting-place for the under petals, on which all the others must be neatly folded; water occasionally, if very dry: commence propagating by pipings at the end of the month.

Picotees.—Treat the same as carnation, and if likely to be too early for show, take off the most forward buds, and allow the best lateral bloom buds to take their place: seeds may yet be sown.

Ranunculus.—The early beds may be taken up when getting yellow, and those now coming into bloom should be shaded and liberally watered.

Roses.—Prepare for budding at the end of the month; propagate the fine sorts; they will strike most readily by slips, put in a gentle heat: syringe with tobacco water when green fly appears; a dusting with snuff is also effectual.

Stocks.—Now is a good time to plant out masses of the German sorts: sow also of the Brompton, &c., to be planted out in autumn.

Tulips.—Expose as they go out of bloom; and when fully ripe, that is, when the leaves are brown, and the stems decay, then take them up: continue to shade those not yet past; remove the seed pods as soon as the flowers fade, unless seed is wanted.

WINDOW GARDENING.

Clear away all bulbs or other plants that are past their prime, and advance the most forward of the succession plants to their places. The foliage of all should be kept perfectly free from dust.

Begonias, as they advance towards flowering, should be shaded from the hottest sun, and regularly supplied with water.

Camellias.—Keep these perfectly clean, and out of the mid-day sun, until they have completed their growth; keep them cool at the root by regular waterings.

Cinerarias.—These must be watered regularly, and kept free from weeds to encourage their growth.

Fuchsias will now be advancing to perfection, and require to be neatly staked, and very regularly supplied with water, or they quickly lose their flowers; shade those in bloom from the most powerful rays of the sun.

Geraniums.—Continue shade to those in flower, and water copiously as the heat increases; this is now best done at night, so that the plant may recruit its energies before the heat of the day.

Myrtles and similar evergreens should be copiously watered, and freely exposed to light and air, to prevent them from growing weakly.

Primulas.—Shift into larger pots if requisite, and keep them from the bright sunshine, giving them plenty of air and moisture, night and morning.

Roses.—Shade those in flower, and keep them free from fading leaves or flowers: remove those out of flower to a sheltered situation, and do not let them suffer for want of water.

Violets.—Keep those planted out for autumn potting, free from weeds, and well watered in dry weather; still propagate by runners or cuttings if necessary.

Wardian Cases should be placed as near the light as possible, and watered thoroughly if necessary; replace any deaths among the plants, and keep all dead or decaying leaves picked off.

PITS AND FRAMES.

Annuals.—As the tender annuals advance into flower, remove them to the greenhouse or conservatory, and shift such others as require it, giving them plenty of room and air as they expand; sow again early in the month, so as to maintain a supply through the season; and pot off those sown last month, keeping them close and shaded for a few days until they root again, and then admit air and light gradually.

Half-hardy plants, as verbenas, &c., will be chiefly removed by this time, except new ones, which it may be advisable to grow freely for specimens, or to supply cuttings: keep such plants shifted as they advance in growth; pick off all the bloom from the latter, and take off the cuttings as soon as they are of sufficient size; insert the cuttings thinly in very sandy soil under bell glasses, and plunge them in a gentle bottom heat; keep them shaded and moist, and in a fortnight they will be fit to pot off, and also to top for a fresh supply of cuttings.—Attend regularly to the watering of all plants in the frames, and guard carefully against the increase of green fly or other vermin.

Forcing Pit.—All plants which have been brought forward here, require regular attention during the heat of summer, that they do not suffer for want of water; plunge those lately done with, such as roses, in a partially shaded place in the open ground, and mulch them with litter of any sort if the weather sets in very dry; remove suckers, and cut any strong growing shoots, so as to enable the plants to form a regular head for the next season. Give air freely to any plants still indoors, and guard against the increase of green fly, or other insect enemies. They generally multiply very rapidly in the still atmosphere of a pit or forcing-house. Leave air all night if the evenings are hot.

THE GREENHOUSE.

Temperature.—From 60 to 65 degrees by day, and 50 degrees during the night.

Ventilation.—Give air freely day and night, but avoid heavy rains reaching the plants through the openings of the top lights, or too strong currents of air by the side lights.

Watering.—Administer water plentifully, both to the root and top of the plants; syringing freely all plants in a growing state. Never allow a hard-wooded plant (such as a heath, epacris, &c.) to droop in the leaf; if this occurs it is generally fatal. Syringe lightly at night, but copiously in the morning, so that the plants are somewhat dry by the time the sun becomes powerful.

Potting.—Continue to shift such plants as require it, but do not over-pot hard-wooded plants. They are easily injured by such a practice, even when great care is taken in the drainage. Pot or prick off all seedlings or cuttings as soon as they are ready, and shade and water regularly until they are established in their new positions.

Soils.—Always be on the look out to collect different substances, so as to have them within reach at all times. Few soils deteriorate by laying in heaps; even manures intended for composts for greenhouse plants can hardly be too much decomposed; hence the advantage of having a good stock.

Dressing.—Keep every part of the house, and every plant quite clean; never allow one plant to usurp a portion of the room necessary for its neighbour; stake and tie up all as they advance in growth.

Insects.—Fumigate with tobacco, or syringe with diluted tobacco water as often as the green fly appears; a day or two of neglect is not to be recovered.

Agaves may be placed out of doors in their summer stations, and should be freely watered as soon as they show signs of renewed growth.

Aloes, and similar plants, may be watered according to the vigour of their growth, in which they should be encouraged to the utmost.

Alströmerias should be shaded if in bloom, and kept cool at the root: as they begin to decline after flowering, the quantity of water should be gradually reduced.

Annuals, such as are still in a luxuriant condition, may be finally shifted, and may also be tied out, to give them the requisite shape; water the more luxuriant growing sorts now and then, with manure water.

Azaleas.—Grow these on freely, shifting all such as require it; let them be shaded from the mid-day sun, and freely watered and syringed until their growth is complete, when they may be more exposed.

Calceolarias.—Keep those for late blooming in a shady, cool, and airy house, carefully guarding against either an excess or deficiency of water; shade those in bloom, and remove such as are past, to a cool frame.

Camellias should be encouraged to perfect their growth by a regular supply of heat and moisture, with a sufficient admission of air to prevent their being weakened, or drawn, as it is technically called.

Cape Bulbs.—These plants require the greatest amount of light which can possibly be given; they should therefore be near the glass, and should also enjoy a free circulation of air, and considerable moisture, while in a growing state: as soon as the foliage of any of the species begins to wither, withhold water.

Cephalotus follicularis (New Holland Pitcher-plant) must be kept moist both at root and top, but a free circulation of air is also necessary to guard against excessive damp.

Cinerarias.—Continue to propagate and pot off seedlings; grow them in cool frames, and shade them from the sun, but expose them freely at night.

Chrysanthemums should be grown in a free airy place, and not urged too much yet: those turned out should be kept free from weeds, and watered occasionally in very dry weather: shift a few of the earliest sorts so as to encourage them to bloom early.

Crassulas.—Those past blooming should be grown on freely, in order to gain time to ripen them thoroughly before autumn: an occasional watering with manure water may be had recourse to, when they are in full growth.

Cyclamens.—Shift those growing freely; or, what is better, plant them out, especially seedlings, in a free soil and shady situation, where they will grow rapidly.

Epacris.—Water freely until they complete their growth, when the supply must be shortened, but by no means withheld: tie them out regularly, and stop over-luxuriant shoots.

Ericas.—These may still be shifted where necessary. Protect the pots of such as are set out of doors from the direct rays of the sun, and also from dry currents of air, either of which conditions is very fatal to these fine-rooted plants; a good plan is to plunge them in coal-ashes, or moss, keeping this material in a rather damp state, and allowing the heads of the plants to be freely exposed, except to the mid-day sun. Attend very particularly to the state of the roots, and keep the tops well stopped back, to form neat compact heads.

Fuchsias.—Shift the plants as they require it, shading them for a time afterwards: water abundantly, and keep them neatly trained.

Gompholobiums, and similar creeping plants, should be encouraged in their growth, and brought into the requisite shape as they advance; keep the roots cool, and water carefully.

Haworthias, *Apicras*, &c., should be encouraged in growth, but not so as to commence a second start: as they appear to arrive at maturity, the supply of water should be reduced, but the plants should still be submitted to intense light and heat.

Helichrysums require careful watering, and their roots and pots should not be exposed to the direct action of the sun; regulate such as are growing freely, by stopping the most luxuriant shoots.

Leschenaultias.—Shift such as require it, making sure of a porous soil, so that water may be freely administered, and may as freely pass away; tie out the branches so as to form a nice round head.

Lilium japonicum (Japan lily).—Support the advancing stems, and give a final shift; supply water freely, and keep the leaves free from dirt by frequent syringing.

Mignonette.—Those plants which are intended to assume a tree-like habit, must be kept free from side shoots, and all the flower heads must be pinched out: plants raised from cuttings are most manageable in this respect, as they do not produce so many laterals.

New Holland Plants, as acacias, hoveas, bossiæas, &c., if placed out of doors, should be secured from being blown about, and screened from the mid-day sun: water regularly, as long as they continue to grow.

Orange Trees.—Towards the middle of the month these may be placed out of doors: the situation should always be as sheltered as possible from harsh winds, but fully exposed to the sun; syringe them well on hot evenings, and give them an occasional watering with manure water. Those in-doors should be encouraged by similar appliances, and a free circulation of air: stop or cut back all strong or misplaced branches.

Oxalis.—Where the leaves of any are decaying, water should be gradually withheld, until they are quite dried off, and the pots may then be put away on a shelf where they will get plenty of sun, but no water.

Pelargoniums.—Cut down those that are out of bloom, and keep the roots rather dry for some time: continue to shift such as are approaching to bloom, and also such as are intended for still later use. Propagate all sorts, those for forcing first, by cuttings, under hand-glasses, in pits, or in the open border. Stop those previously struck, so as to make them branch to form a head: if these are sufficiently advanced to flower this season, keep them cool, until they show bloom, when they may be gradually brought forward.

Primulas.—Keep these cool; shift them when necessary, and pay great attention to the supply of water. Propagate the double, or any other approved varieties, by parting the plant, or by cuttings; treated thus, they are very liable to damp if great care is not taken.

Proteas, Banksias, Dryandras, &c., if placed out of doors this month, should be carefully attended to with water; they must never be absolutely dry, nor yet do they require that superabundance of water which is necessary for some plants.

Rhododendrons.—Place these out under a north or east shelter, and protect the roots and pots from sudden dryness: if they have finished growing, they should be very carefully watered, for fear of starting them again into growth.

Roses.—Keep up a good supply of the tender China and tea-scented varieties; they are nearly always in flower: potted now from the open ground, or treated with a good shift, they will be found useful in the autumn.

Salvias.—Continue to stop the leading shoots, and form the head of the plant as required: shift where necessary, using a light rich compost.

Stapelias.—Encourage the growth of these by free watering, intense light, and great heat: shift any that require it, but these plants are generally kept in small pots—for what reason it would be difficult to say.

Tropæolums.—Shade those in flower, and keep the others in the most airy part of the house: such as are past their prime should be gradually stinted of water, and eventually left entirely dry to "roast" in the sun for a month or two.

THE CONSERVATORY.

Temperature.—From 70 to 75 degs. during the day, and about 55 degs. at night.

Ventilation must be allowed to the fullest extent in hot weather, but avoid excessive winds, or falls of rain or hail coming in contact with the plants.

Watering.—Water should be applied freely, both at the root and over head, especially on warm evenings: keep up as damp an atmosphere as possible, for this is almost the only check on insects in this structure.

Arrangement.—Alter this as far as possible at every opportunity, so that sameness may never appear in the grouping either of plants or colours. The transposition of a very few large showy plants will work a great change in the appearance of a house, and this may generally be done in many different ways, so as to materially alter the character of the grouping.

General Directions.—Scrupulous neatness is so essentially a feature in the management of this structure, that a dead or fallen leaf is not to be tolerated for an instant: all dust, cobwebs, or other accumulations should be removed as soon as formed; all water slopped about should be wiped up, and every means taken to keep the place in equal order with the rooms of the mansion to which it is attached.

Climbing Plants, attached to the pillars or rafters, should be regularly pruned and tied in, and so disposed as to display their flowers to the best advantage: the roots should be thoroughly examined, to see that they do not suffer for want of water.

Sweet-scented Plants are of the first importance here, and a constant succession should be provided, such as heliotrope, aloysia, mignonette, and many others: now is the time to secure a supply of these for autumn, by keeping those of a shrubby habit shifted, and stopped, to prevent their blooming, and by making successional sowings of those which are only of annual duration.

THE PLANT STOVE.

Temperature.—From 80 to 85 degs. during the day, and 65 degs. during the night.

Ventilation.—Give air freely when the action of the sun raises the temperature much above that indicated; but avoid cold or dry currents, and shut up early in the afternoon, or directly the thermometer indicates a material fall.

Watering.—Keep the syringe in active use, but beware of wetting plants overhead when they are dry at the root: water the roots first, and then syringe; an occasional syringing with lime water will do good.

Potting.—Shift all plants that may require it before their roots get too much matted round the pot: give liberal room to the strong growing ones, according to their habits, and shade them for a day or two afterwards: pot off seedlings so as to have them well established by the autumn, but do not sow any more seeds, of shrubby plants especially, if it can be avoided, after the beginning of the month.

Insects.—Continue the use of every available means for the annoyance or destruction of injurious insects as soon as their presence is detected, allowing them as little time to rest or multiply as possible.

Achimenes.—Remove those in flower to a cooler situation, and reduce the allowance of water accordingly: encourage the growth of those not so far advanced, and stake and tie them out as they progress.

Allamandas, Beaumontias, Echites, and other strong-growing climbers, should be encouraged to grow freely by copious waterings and syringings; they should be kept from rambling too much by stopping the stronger shoots often.

Alpinias, Hedychiums, and their allies, should be grown as rapidly as possible, removing them to a rather cooler and more airy situation just before they come into flower.

Aphelandras, Justicias, Ruellias, &c.—Propagate these by cuttings in bottom heat, and grow them on; they will many of them be very serviceable in autumn and winter.

Amaryllids.—Keep these exposed to the full rays of the sun, and well supplied with water as long as the leaves exhibit signs of growth; afterwards gradually withhold it.

Begonias.—Encourage the large growing species by shifting and free watering, with exposure to heat and light.

Burchellias.—Continue the previous treatment until the plants have fairly done growing, and then remove them to a cooler situation to mature their wood.

Cacti.—The free-growing sorts should be encouraged to develope themselves by rich soil, copious waterings, and full exposure to heat and light. The early forced plants will have completed their growth; the supply of water should be gradually reduced, and they should be placed out of doors in a hot place, but sheltered from heavy rains.

Cinnamomum (Cinnamon tree).—Keep this growing freely, but shade it from hot sun, as the leaves are apt to blister.

Clerodendrons.—Remove those in flower to other houses; and push on the others by shifting and watering freely. Watch closely against the attacks of the mealy bug, which is very fond of all the family.

Climbers.—Prevent any loose or straggling appearance in the plants by stopping and tying in as often as necessary. Provide a due supply of water to the roots of such as are turned out.

Daturas.—Keep up the succession of these by removing those sufficiently advanced to other houses; and introduce or shift fresh plants as required.

Erythrinas.—Attend to those which have been cut in for a second bloom, and take off all the shoots but one, two, or three at the outside; stake those left, and keep the pot plunged in bottom heat. Water freely, and guard against the red spider.

Euphorbias.—If the succulent ones have completed their growth towards the end of the month, gradually reduce the supply of water, until they receive barely enough to keep them from shrivelling. Propagate *E. fulgens* for winter flowering.

Ferns.—Maintain a moist atmosphere and subdued light about these plants; guard against stagnant water about the roots.

Gardenias.—These should be grown freely on dung beds, in frames, where they receive plenty of light, and have a continually moist atmosphere about them: rest some as soon as they have completed their growth, for early forcing.

Gesneras, Gloxinias, &c.—Continue the previous treatment, removing such as come into flower gradually to a drier and cooler place.

Hippeastrums, Crinums, Pancratiums, &c.—Water freely until the leaves cease to enlarge, then gradually lessen the supply of moisture; but never entirely withhold it from such of the species as remain evergreen.

Hydrangeas.—Keep up a good supply of moisture: place the plants under a north wall, and gradually bring them into the full sun-light, and reduce the amount of water as they complete their growth.

Ipomœas.—Train these as they advance,

and stop the shoots of the stronger growing sorts, so as to expose their flowers to the eye; they soon run into a confused mass.

Ixoras.—Remove those plants which have completed their growth to a cooler situation. Encourage the young plants by shifting and applying bottom heat.

Jasminums, Rondeletias, Brunfelsias, &c.—Continue to treat as before, removing those in bloom to the greenhouse, and exciting others, so as to secure a succession of bloom.

Lantanas.—Those out of flower may be turned out-doors into a sunny exposure for a few weeks, and may then be cut in, and again submitted to heat.

Luculia gratissima requires to be kept growing, and well syringed to keep it clean.

Lycopodiums are useful for covering out of the way places in stoves under other plants, and where nothing else will grow; keep them moist.

Malvaceous plants, as hibiscus, &c., require large supplies of water at the root, and great attention to keep them clear of the red spider.

Manettias, and similar climbers, require constant attention to regulate their growth; stop them occasionally, to improve their shape, by forming side branches.

Melastomas require great heat and free exposure to the light, to flower them well: they are also very liable to the attacks of mealy bug and red spider.

Melo-cacti.—Continue to grow these in strong light and heat, and shift such as require it: their roots are large and run deep, and require plenty of room to grow in.

Musas will be growing freely, and should be assisted by strong heat and light, and abundance of moisture.

Nepenthes (Pitcher-plant).—Do not let these plants be too much disturbed or handled, which injures their growth; continue to supply the requisite amount of heat and moisture; they require abundance of both.

Neriums.—Shift and excite such as have been in bad health, keeping them in a moist heat; syringe often; examine them closely for the brown scale.

Nymphæas (Water lilies) can seldom be moved from the house in which they flower, as they require all the heat and sunshine that can be given to bring them to perfection. Shade them in the middle of the day when in flower.

Palms.—Water and syringe regularly; renew the earth about them, if necessary, but do not damage the roots.

Polianthes (Tuberose).—Place those in flower in the conservatory, and under shade, so as to preserve the flowers.

Thunbergias.—Sow a few seeds at the commencement of the month, to succeed the older plants, and pot them off, and stop them as they advance. The red spider is very destructive of these.

Vincas.—Let some of them grow away to bloom, and keep others stopped back; propagate by cuttings.

THE ORCHID HOUSE.

Temperature.—From 85 to 90 degs. by day, and about 70 degs. at night, in the warm house. In the cool house,—75 degs. is high enough for the day temperature, and 65 degs. for the night.

Ventilation.—Air should be freely given in very hot weather, especially at the top sashes; but do not admit a current of external air directly on to any of the plants.

Watering.—Examine the plants to see that they are not dry at the root, before the syringe is used. Keep the house damp and the paths flooded.

Insects.—Never relax in the endeavour to keep the plants clear of their many insect enemies. Occasionally dip the plants in the cistern; many may be thus got rid of.

Potting.—A few may require a shift; but great care should be taken of any new roots they may have formed; it is best not to shift them while in an active growing state.

Shading.—This should be thick enough to cause quite a gloom in the house during the brightest sun-light. The few kinds that require more light may be set in the most open parts.

Soils.—Collect all the requisite substances in dry weather, and have them at hand for use when required. Almost any wood that is not resinous will do for blocks; that of the cork tree is found very suitable.

Imported Plants.—Proceed very cautiously with these until they begin to grow freely. If newly arrived, keep them in a cooler and drier house until they push.

Aërides, Saccolabiums, and *Vandas,* should still be excited to continue a vigorous growth, by all the appliances within reach.

Cymbidiums.—Encourage the new growth by a plentiful supply of water, and frequent syringings over head.

Cœlogyne.—Rest any of these which may have completed their first growth, by removing them to a cooler house.

Dendrobiums, if not all shifted, should be examined immediately, and got into a growing state as soon as possible. Guard against any check to those which are growing.

Oncidiums.—Syringe frequently, and keep the roots damp; but no water must be allowed to collect about the young pseudo-bulbs.

Stanhopeas.—Continue to excite a vigorous growth by liberal supplies of water and great heat, but let them have air enough to dry them a little now and then.

The Pink.

GLENNY ON THE PINK,

ITS PROPERTIES AND CULTURE.

The Pink is one of the oldest of the genuine florist's flowers. The conversion, as it were, of single into double races was a work of the olden time, and year after year improvements have been made upon varieties already in existence, until some of the modern flowers have become in all respects worthy of the raisers and of the improved taste of the floral public. But there are very few that deserve this distinction. The prevailing fault of its nature is a serrated edge to the petals, and, strange as it may appear, there is so strong a disposition to revert to that fault, that many of the varieties which have been exhibited with perfect rose-edged petals have frequently, in untoward seasons, gone back to the worst description of serrated petals; but this has been only temporary; the next season, perhaps, the variety has recovered all its better qualities. The properties of the perfect pink have been already well established. As a complete paper on their culture and management should comprise the rules by which the value of a flower should be tested, they are subjoined:—

PROPERTIES OF THE PINK.

The properties of the pink, so far as form, substance, and some other particular features are concerned, should be the same as those of the carnation and picotee.

1. The flower should be circular, and rise like half a ball.

2. The petals should be thick, broad, smooth at the edges, without notch or serrature, regularly disposed, and each row smaller than that immediately under it.

3. The ground should be pure white; and the colour, whatever it may be—from rose-colour to dark red, or from lilac to dark

purple, approaching black—should reach from the inside of the petal far enough outwards to show in front beyond the petals above it, and form a rich eye.

4. A narrow plain even lacing or stripe of the colour, should appear inside the white edge, which should be just the same width outside the lacing, as the lacing itself is, and as even.

5. There should be no break or vacancy in the lacing, and the colour inside of the petal ought, as well as the lacing, to be well defined, forming a circular coloured eye or centre to each row of petals.

6. Self-coloured petals, split petals, and split pods, are disqualifications. Notched or saw-like edges, broken or imperfect lacing, specks or foul marks on the white, thinness or flimsiness of texture, looseness of construction, or deficiency of petals, are glaring faults.

7. In a general way, in all other respects but the size and colouring, the properties of the pink should be similar to those of the carnation and picotee; and no pink ought to be less than two inches in diameter.

The progress of the pink—that is, the transition from saw-edged petals to rose-leaved petals, as they are improperly called—has been slow; and such is the disposition to a serrated edge, that some of the kinds which will one season bloom almost without a notch, will in other seasons be rough and serrated. But this disposition may be conquered by any one raiser of new sorts, who will uniformly throw away, or give away, all the varieties which come at all rough, or which do not exhibit a manifest improvement, and reserve none but those whose petals, many or few, are of the right kind. A semi-double variety with good petals is infinitely better to save seed from than the most double flowers which are deficient in that particular; and no flower offers so much opportunity and so much room for improvement.

These rules are now acted upon throughout the country, more or less. In some few places, however, where the marking of the flower is considered of higher importance than the form, they still treat the pink as a semidouble flower; and if they can get two rows of petals, and two to stick up back to back, they think it enough, and therefore exhibit loose, flat, ill-looking specimens, which among the florists more advanced in taste would be thrown away; and as a handsome double flower would make such things look very ridiculous, they actually pull out the petals of any that would by their superior form and character show the semi-double varieties off to a disadvantage, and reduce them to the miserable state of the majority. The varieties, therefore, which will do well enough for some localities, would be considered a complete take-in if sold in the south: but the difficulty of making a man adopt an improved race, when it renders all his present collection worthless, is by no means easily got over; and the facility with which he can raise the sorts good enough for such easily pleased people, increases the difficulty. In a quantity of seedlings raised near London, one great improvement in the kinds we already possess, in a hundred or two, would satisfy a man, and of the remainder which he would throw to the dunghill there could be a score semidouble varieties that would be acceptable where the miserable things we speak of are shown. It is, therefore, not likely they should adopt hastily a style of pink which would condemn their starvelings to destruction; and that the public may not see the contrast they reduce our best varieties to two rows of petals, when obliged to show them. Time, however, has done wonders, and will continue, in spite of a vitiated taste and opposing interest, to make inroads upon the easily procured but worthless kinds which, for the present, form the majority of collections in particular localities; though every year lessens the ground they occupy, and narrows the influence of the florists who obstinately defend a race of flowers half a century behind the improvements of the southern cultivators. We proceed now to the culture of this pleasing but somewhat neglected beauty.

SOIL AND SITUATION.

The soil best suited for pinks is similar to that recommended for all florists' flowers, rich in vegetable mould; and if dung be used it should be well decomposed. There is, perhaps, nothing equal to the top three inches of a meadow; this takes in the turf and all its roots, and when rotted is of all composts the best. It contains sufficient loam for all purposes, a very large portion of decayed vegetables, and much of the qualities of dung, from the feeding of cattle in the pasture. This laid together for a year and then turned over, and the wire worms, grubs, and other vermin carefully picked out, might be chopped to pieces, and used in a pink bed; but for the sake of more effectually rotting the vegetable matter, and at the same time making a complete clearance of vermin, it is desirable to let it lie by a second year, during which time it should be all turned over four or five times. It need hardly be mentioned here, that the presence of wire worms is fatal to pinks; there is nothing so destructive, nor so difficult to eradicate; salt has no effect on them; lime-water is useless; they seem to resist all kinds of poison, even that which would actually kill the plants themselves. While the compost is in the heap a vast number may be caught by thrusting carrots into the heap at various places, and drawing them out and examining them about once a week, for the wire worms attack the carrot with great avidity, and eat their way into it; by drawing them out once a week there will be a great number caught, and there is nothing that serves so well for a trap. It may be observed that almost all pastures have these more or less, and it would be very unsafe to trust any such soil without a thorough examination and clearing. Grubs, too, often abound in pasture land; and though the top spit of a loamy field is the best of all soil for almost any thing, it requires the greatest care on account of the various kinds of vermin that are to be found among the roots of the grass. But as there may not be an opportunity of procuring new soil for a pink-bed, the next best thing to do is to dress the ordinary soil with a good three inch thickness of decayed dung from an old cucumber or melon bed, or well decomposed cow-dung; this three inches should be forked in, and mixed with the top spit of the ordinary soil, and it will be found well adapted for the plants.

CHOICE OF PLANTS AND PLANTING.

The best commencement of pink growing is to provide or procure plants of some successful cultivator in the autumn, from the store bed. See that they are healthy and well rooted, and having dug the bed and well mixed the dung with it—or if made entirely new, levelled the surface—plant the pinks out six inches apart all over the bed; water them so as to settle the earth about the roots. With regard to the sorts with which to begin, the list appended will be of some use as a guide; but as pinks bloom at different seasons, that is to say, some rather earlier than others, it is right, perhaps, to grow the whole, and they are not too many for a collection:—

SELECT LIST OF PINKS.

Turner's Beauty, Kirtland's Dr. Daubeny, Smith's Diana, Harris's Dauntless, Wilmer's Elizabeth, Brown's Garland, Kirtland's Gay Lad, Bragg's George Glenny, Ward's Great Britain, Smith's John Hampden, Turner's Masterpiece, Jelf's Mary Anne, Prior's Miss Blackstone, Hill's Queen of England, Church's Queen, Henbrey's Rubens, Neville's Enchantress, Keynes' Matchless, Norman's Henry Steers, Garrat's Queen Victoria, Hodge's Melona (alias Hodge's 166), Day's Earl of Uxbridge, Norman's Defiance, Aker's Lord Brougham, Collis's Majestic, Unsworth's Omega, Norman's Henry Creed. Creed's President, Garret's Alpha, Cousin's Little Wonder, Wilmer's Duchess of Kent, Legge's Prince Albert, Weedon's Queen Victoria, Wilmer's Prince of Wales, White's Warden, Smith's Doctor Coke, Bunkhill's Queen Victoria, Neville's John Dickson, Church's Rosannah, Wilmer's Queen Victoria, Hodge's Gem, Holmes's Coronation, Fairburn's Bob Lawrence, Garret's Emperor of the Roses, Kirtland's Lord Valentia, Mead's Susannah, Cant's Cortesian, Headly's Duke of Northumberland, Stow's Elizabeth, Jones's Huntsman, Kerr's Harriet.

Many of the distinctions in pinks are very slight, and the shades of colour blend so nearly into one another, that it is extremly difficult in many instances to decide whether it is nearer a purple or a red, or a rose and a red; but as the chief property is the form and the regularity of the lacing, and in the metropolitan shows the different colours are not classed, —the only way in which a difference is recognised is on stands, where the greater the contrast and variety the better, if all other points are equal.

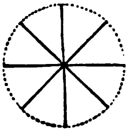
Most of the growers for sale cultivate the whole of these sorts, and many more; for every one is a show pink, and some being later than others, it enables us to get a number of blooms of different varieties at seasons when we could not do it if we depended on a smaller assortment. Besides this, there are seasons in which one flower is much worse than others, although in other seasons it would far surpass them; if it were not so, we could get the best twelve or eighteen sorts, and grow more of each sort; but we should find ourselves always deficient in number of good blooms, because they will not all bloom together; and hence the advantage of a more numerous collection, including pretty nearly all the varieties that yield even a chance of a bloom fit to exhibit. If the plants cannot be procured in autumn, or if a person is determined to commence in the spring, the plants ought to be obtained in pots, and such as have been wintered in pots, because these may be planted out as late as April, and not be materially worse than if they were autumn planted. In this case the balls of earth must be turned out whole, and should be soaked in manure water long enough to wet the soil throughout. This manure water may be made with a spade-full of dung well decomposed, and a pail-full of water, the dung being well stirred about and mixed; some of this may be put in a shallow pan, and only enough of it to reach two-thirds up the balls, which may be placed in the liquid about five minutes, whence they are put, without being disturbed more than is necessary, into their places. Water the bed well, that the earth may be closed about the roots; and if there be any danger of frost, it will be well to throw over the whole bed some loose or light stuff, such as peas-haulm or broken straw, not to shut out the light, but sufficient to keep off the sun and wind for a day or two. They will soon establish themselves. The object in soaking them is this:—If the balls of earth, as they are turned out of the pots, are placed in the bed dry, it will be difficult to wet them all through by merely watering them in, because they are so much more compact than the bed; and if properly established in the pots the roots will be completely matted. Next to soaking the balls is watering the pots well before they are turned out; but this is not so well as soaking, because when they are watered in the pots they do not turn out so clean, whereas if they are soaked afterwards, and put in their places carefully, they set off growing directly, and frequently bloom equal to autumn planted pinks. In two or three days after they have been put out, the litter may be removed, and be only replaced when there is a prospect of a frost, the last thing at night, to be taken off in the morning. In a week or two they will be fully established, and will require no more protection.

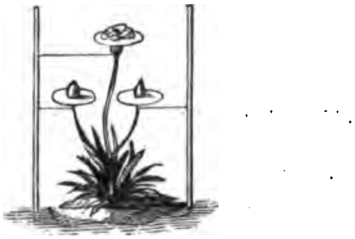
TREATMENT UP TO BLOOMING.

The bed must be occasionally refreshed with water if there be no rain, and the ground becomes dry; but none should be given while the earth is moist, which will often be the case when the surface is very dry, and this may be ascertained by stirring the earth a little an inch or two down. Those which have been planted in autumn should have a top dressing of well rotted cow-dung; and before this is laid on, the soil should be stirred with a hoe, and the lumps bruised. The cow-dung, or if it cannot be obtained, the decomposed dung of a common hot-bed, should be run through a coarse sieve, and laid on an inch thick all over the bed, and well round the plants, so that when watered, or in the event of rain, it may get washed in among the roots, and encourage the growth.

BLOOMING.

When the plants throw up their flowering spikes, the strongest of each plant should be saved, and all the others taken away: only one spike should be left to the strongest plants, and as these develope their buds, they should be reduced to two or three at the most. As these swell and approach the time of bursting, each bud should be tied in the middle with a piece of bass matting, or coarse worsted; and as soon as they are ready to burst, the calyx should be carefully torn down to the tie, at all the divisions, that the petals may be developed on all sides alike. At this period cards should be placed on the calyx, to lay the petals down upon as they come out: the mode of fastening the card is simple enough, but it requires attention; for instance, there should be a circle drawn in the middle, about as large as the pod of the bloom, and with a sharp knife there should be cuts made across the circle four times at equal distances, the second cut exactly crossing the first, and the third and fourth cuts being made exactly half way between them, as represented: this being done, the circle should be opened by thrusting the point of a pencil, or round piece of wood through it, and pressing the points out to the extent of the circle. The card is then cut through, to allow the stem to pass, and it is to be placed on the bud, with the points downwards, and brought up the bud so as to form an under support to the lower or guard petals. By placing a stick in the ground with a wire stuck in it, and bent at the top into a sort of ring like the annexed sketch, the card may be held up in its place; the wire is bent thus, and the end of it is pointed, and thrust into the stick; but there is a description of soft copper wire, which does not require more than to be bent round the stick, and can be moved up and down it, or bent a little up or down, so as to hold up the card. The sticks and wires may be thus explained;—the wire keeps the card from slipping down, even if it has a disposition to do so; the card, however, when the points are cut properly, and the hole made of a right size, will almost hold itself up; but this contrivance supports the bloom stalks, and keeps every thing steady in its place. The flowers must now be shaded, and frequently refreshed with water. The best shade is an ordinary small hand-glass, *fig.* 1, held up by a short stake, *fig.* 2, up and down which the glass moves, by means of a socket, through which the stake





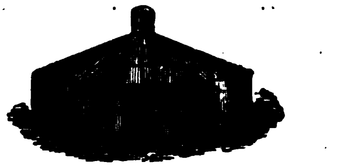


Fig 1

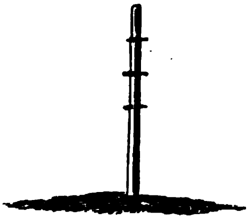


Fig 1

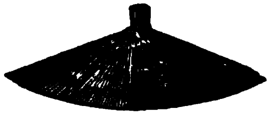


Fig. 3

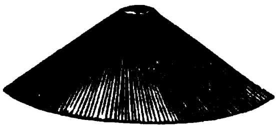


Fig 4

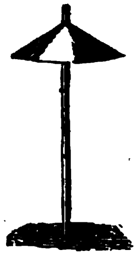


Fig. 5.

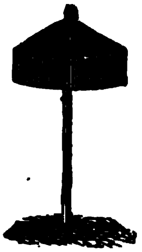


Fig. 6.

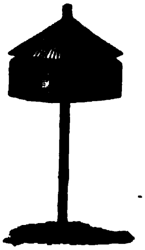


Fig. 7.

passes ; and by a peg fixed in one of several holes, it is kept firm. The advantage of this is, that the shade can be thrown over the glass in a moment, and taken off morning and evening, leaving the glass, which protects the flower from wind and rain, and gives it the benefit of all the light. The shades may be made of pasteboard, or paper, or may consist of a cabbage leaf, or any other object that will keep away the sun. A sort of shade is represented by the cuts 3 and 4. The pegs are placed about two inches higher than the flower, and the glass shading dropped on to the stick; figs. 5, 6, and 7. The shades should be always handy. In a cloudy day they are better off than on, but they should be always put on when the sun is out, and indeed, in light, clear weather, and when the bloom is advancing towards perfection there should always be a shade, if it be only a slight one, like part of a newspaper. In very hot weather the shading must be heavier. We have seen shades painted green and lead colour, but they cannot be too pure a white, for dark colours absorb heat, and form an oven for the flower, at the same time that they keep off the bright rays of the sun, and close heat is nearly as destroying as sun-heat. In proof of the advantage of light colours, try the experiment of painting one tin shade white; and another black, place them in a hot sun, and you will hardly be able to hold the black one, while the white one will not be hot. As the petals begin to open, the large or ground petals should be carefully placed down on the card, so as to form an outer layer, like a dish almost, and these should in a good flower form a circular outline ; they will not all do so, and indeed, those which are very perfect in this particular are at present rare. The next in size, as they open, should be brought down in a similar manner, and the centre of each should cover the join where the two outer or lower ones meet and fold over. In like manner, as the flower advances, a third row should be disposed, so as to hide the joins in the row below, and if a fourth or fifth row could be formed of good well rounded petals, there is no reason why it should not be done ; but there will mostly be some confused petals in the middle ; pull out such as are really useless, or are all of one colour, for a run petal, that is, a petal, however small it may be, without white in it, would be fatal to the whole stand of flowers, although only in one bloom. When the flower is cut, and wanted for the stand, the petals having been placed as they grew out, will require very little dressing—perhaps hardly want touching ; see that a crown is formed if possible with a couple of petals back to back, or two or three small ones standing up ; and be careful to preserve the horns of the flower, if there be any, for it adds so much to the grace and elegance of a pink, that one might almost be pardoned for making it a point in the properties : but there are exceptions ; they are sometimes ugly, and must come away ; they are at other times unnecessary, on account of the high and handsome crown formed by the petals ; and now and then the horns are discoloured, and in no wise improve the appearance of the flower.

PIPING THE PINK FOR PROPAGATION.

At and after blooming, the grass, as it is called, at the bottom of the flower stem, that is to say, the shoots of the plant, that would, if left, bloom next year, and form a large old plant, should be taken off and struck under a hand-glass, on slight bottom heat on very rich soil. Make up a hot-bed, with about eighteen inches in height after settling, of hot stable-dung; upon this put about three to four inches of good sifted soil, such as we have described for growing pinks in. Having collected all the sprigs or shoots that are large enough from the plants in flower, and tied them up in bunches as they are gathered, with a label to designate their names or sorts, prepare them for striking. Take hold of the upper part, but as low down as you want to secure them, and pick off the heel or bottom joint; then, if there be any stem below the joint, cut it off with a sharp knife close under the joint; strip off a few of the lower leaves, that there may be a stem to thrust into the soil: then place your glasses on the soil of the hot-bed, to make a mark of their size; with a very fine watering pot give the soil a good wetting without disturbing it, and thrust in your pipings to the depth of the stem you made, but do not, as has been the practice with those who ought to know better, shorten the leaves; put them in two inches apart all over, or if pressed for room, an inch and a-half apart; we have seen them only an inch, but it is not advisable to crowd them. As you proceed, place the label to each sort in such way as you will know how to separate them after they are rooted. When the space is filled, take a small watering pot, and give enough water to settle the earth about the stems, and cover them up with the glasses, as soon as the water has sunk in, and the surface has dried a little. There they remain till they strike root, shaded from the sun, and occasionally watered in dry weather; but the watering may be done without for days together, in consequence of their being confined under the glasses; and it may be easily seen whether there is moisture enough in the ground or not, because too much wet is mischievous: examine them therefore occasionally, to see if there be any lack of moisture, and only give it when required. It will soon be seen when the plant has struck root, and the glasses may then be removed, but not too suddenly, and they must not have the broiling sun. Now prepare a bed, as if it were for fresh planting out, and put them out in it three inches apart instead of six; this will hold a vast additional number. From this bed all the intermediate plants may be withdrawn for other beds, or for sale, or for potting to protect in frames through the winter, or for any other purpose.

SECOND SERIES OF PIPINGS.

After the grass, as it is called, has been taken from the main plants, there is a strong second growth, which frequently makes better, and always furnishes surer plants than the first crop. These pipings, when they are large enough, may be served in the same way as the first, but they require more care, and are generally more tender than the first: these will strike, however, quite as readily with care, and when well struck, which is of course much later in the season than the first, they should be planted out as the others, three inches apart; but these are well adapted for pot culture through the winter, as they may be kept growing in frames without getting them too forward.

POTTING FOR WINTER.

The plants best adapted for this treatment, and that require it most, are the weakly and the late pipings. These should be put out one in a pot of the large sixty (three-inch) size, and in the same soil that is recommended for blooming them. These pots should be partly filled with the compost, cone fashion, lightly put in, the roots of the plants spread round the stem outwards a little, and other soil put in and pressed down a little: the object of this is to have the roots sloping down the side of the cone, and the soil put up to the collar of the plant, and no higher. Very few plants thrive when put lower than they were before in the soil; the only exceptions are those plants which rapidly develope roots at every joint, and therefore make fresh demands on the soil at a proper depth, when their previous roots are lower than they have been. These pots should be put into a cold frame, and be covered up with the glasses for a day or two, close, first, however, being watered, to settle the earth about the roots, and allowed to drain. If the sun becomes too powerful, they must be shaded. In a day or two they should have air by tilting the glasses, still being shaded; but when once established in their new location they may have all the air and rain until the winter creeps on, when being in small pots, and the roots touching the side, they ought to be matted in severe weather.

DISPOSAL OF THE PLANTS FOR BLOOMING.

We have now brought round the new plants to the place we set out at, chiefly to direct that those which have been planted only three inches apart must now be reduced to the number that stand at proper distances; all the intermediate plants being removed, unless it has been already done. The spare plants must be put into fresh beds, or into the borders, or be otherwise disposed of; and the beds disturbed by their removal must be stirred all over with a small hoe, without damaging the roots of the plants, and, when properly regulated, have its top-dressing. All the remaining plants in pots must be turned out somewhere; or, if there be any reason to suppose they will be required by those who are improving their collections, as indeed choice ones frequently are, you may repot them in rich compost, in large forty-eight size (five-inch) pots, or thirty-two (six-inch) size; that is to say, the ordinary compost two-thirds, and one-third decayed cow dung, or thoroughly decomposed dung from a melon-bed, the additional richness compensating for the confinement of the roots. These may be bloomed quite fit for cutting, and some of the largest and most double varieties will not only bear to be bloomed in pots, but will carry all their buds to perfection, and yield flowers quite large enough to exhibit with ordinary sorts.

PINKS FROM SEED.

We need hardly say here that seed should be only saved from the very best varieties, those which are approved as approaching the standard—with thick petals, very round flowers, full, double, and rose-edged, colours dense, lacing good, and very regular; such as these will chance to give a good progeny. The seed should be preserved in its pod till sowing time, for which the spring is best, as the plants get large enough in autumn to stand the same hardships as the pipings that are struck. Sow according to the quantity in pots, boxes, seed-pans, or in the soil itself, under a garden light and frame. Let the compost be the same as you would grow in. The seed must be sown evenly and not too thick, as it is better to have to mend the vacant places with seedlings taken from the thickest parts than to have them too much crowded anywhere. As soon as the plants are large enough to prick out, prepare a bed as if for blooming, and plant them out four inches apart in the row, and six inches between the rows; or if room be scarce and seedlings plenty, do it three inches apart all over: here they may wait till they bloom, taking care that as fast as single or semidouble ones show themselves they are pulled up and thrown away, even before they can contaminate the seed of better ones: put sticks, shades, and cards, to any that are really promising, and clear off all others as fast as possible. Seedlings often bloom more vigorously than pipings, therefore it is rarely worth saving one with the hope of its improving, except the stool be large and the flowers numerous, in which case they will certainly bloom larger another season. Although, from people being in too great a hurry to sow, they get large stools, and often, from the immense quantity, and the knowledge that ninety-nine of every hundred are not worth keeping, will not take the trouble to lessen the flowering stems or disbud them, until too late to keep the flowers, it is better to be careful of the seed, and treat the seedlings as if all were worth preserving. Suppose any one of them should be deemed worth notice, pipe all the grass of it as soon as it is large enough, and continue to pipe any other that grows, as fast as it arrives at a state to bear it; and in all respects treat it afterwards as you would an approved variety.

MONTHLY TREATMENT.

January.—Protect the beds of pinks with litter, or hoops and mats, against excessive frosts and falls of hail or snow. Those in pots under glasses must be protected in like manner, as the frost easily penetrates the thickness of the pot, against the sides of which the roots lie.

February.—Continue the treatment of last month, but give all the air you can in the mild weather.

March.—If a fine open month, the beds may be hoed, the soil well bruised, and a top-dressing of dung, well decomposed, put all over it. Plants in pots ought to be now turned out in beds, or where they are to bloom. New beds may be formed with strong-rooted plants, removed with great care; but they must not be expected to give flowers so good as those planted in autumn. Sow seed.

April.—Plant beds from pots, and even from store beds, if neglected until now, but with diminished chances of bloom from the store beds, though good chance of success from pots. Hoe and top-dress, if not done before. Sow seed.

May.—Weed the beds carefully, and occasionally hoe or stir the surface a little, without, however, injuring the fibres. If the weather be dry and parching, do not omit watering—not merely each plant, but soak the whole bed. Towards the end of the month, as the bloom-stems rise, remove all but one from each plant; put sticks to the remaining ones to tie them up to.

June.—Weed the seed-beds as well as the blooming beds, and also seedlings in pots, for while in this state they are easily overrun and killed; many small weeds, chickweed in particular, twining their shoots all about the young plants, and killing them outright for want of nourishment. Disbud all the flower-stems, leaving only the number you wish to bloom; place the stakes ready to tie them up, if it was not done last month. As the flower-buds swell, tie them half way down with bass or even worsted, and tear down the calyx to the tie; as the guard leaves, or petals, develope themselves, commence the dressing by placing them in their proper places; put on the shades, and give abundance of water in dry weather. Commence piping. Examine blooming seedlings, and throw away the worthless ones : prick out seedlings if too thick.

July.—Early in the month proceed with piping; continue to weed and water seedlings of the present year: others, blooming seedlings, must be treated just the same as the named flowers. Towards the latter end of the month there may be other grass ready to pipe; continue to prick out seedlings of the present year, if too thick.

August.—Continue piping the after-grass as long as there is any; and now is the best time to bring in plants piped in June. If they are carefully removed from the piping-bed, with plenty of root, you can do as you like with them. The seedlings require weeding and watering as usual. Towards the end of the month you may plant them out in the store-beds, the seedlings of the present year.

September.—There is little to do but plant out late pipings, and pot those intended for the frames. Hoop over the beds intended to be protected with matting or cloths, and continue making blooming beds, and planting out.

October.—Continue to plant out late pipings, and make blooming beds: pot pipings for frames: protect the seedlings of this year with matting or litter, in case of frost or cutting winds.

November.—It is not too late to make beds, or plant out and pot late pipings and seedlings. Be careful of frost; use litter or mats, and never put them on in mild weather, except at night.

December.—Adopt the usual precautions for the winter months. Be always ready to cover against heavy rains, hail, snow, frost, &c.; and give all the air you can in mild weather.

GENERAL OBSERVATIONS.

The Pink is called a monster flower, from the fact that although there are generally petals that would fall into their natural places with assistance, there is nothing to guide them in a general way, because the double flowers are, while in the pod, a solid mass of petals, crowded to the extreme, each swelling and growing as it may, on a base as fine as a thread, powerless in the direction of such a weighty upper portion. The flower, therefore, requires the aid of the florist as its petals are developed. In some very double kinds, the largest petals, that should be the first to fall down, are often crowded up into the centre of the bloom, among the small ones that should be uppermost. Those which have the thickest petals in a general way require the least aid; and those which are not extravagantly double will frequently require little or no dressing.

The cultivation of pinks in pots for exhibition as such, has been frequently talked of as a desirable thing to accomplish; but this, if done at all, will be done by the exhibitors of plants. Florists accustomed to cut off their blooms, and carry them in a small box with little or no trouble, cannot be reconciled to the practice of carrying a dozen, eighteen, or twenty-four pots, which will require a cart; and if we look to the plantsmen to show them, they will never take the trouble to card and tie and dress the flowers. This has been considered the reason why pinks have not been shown in pots.

Pink Societies generally give their new members a dozen pairs of pinks to begin with, and most of them give a prize for what are called maiden showers—that is, showers who have not exhibited before. This is to encourage young beginners, whose productions are not expected to equal even the losing stands among the old ones. How much better is it to adopt this mode of increasing the number of pink growers, than it is to discourage any attempt, by showing them at the very first, that it is hopeless to compete with those who have the advantage of experience.

It has been the strangest thing imaginable to see a perfect stand of pinks; the very best we ever saw was exceedingly faulty: and such is the varied character in which this flower will come occasionally, that we have known three or four blooms cut off the same plant and shown in a stand as different varieties. But although this was a manifest fraud upon the people who were competitors, it would not be so in the metropolitan society; the rule there is, that the blooms shall be dissimilar: so that while two or three flowers might be cut off one variety, and pass because they were really unlike each other, two of different varieties might, by being too much alike, throw out the stand.

Abies canadensis.

CONIFERÆ.—THE ABIES, OR SPRUCE FIR.

ABIES, *Don* (the Spruce Fir).—The derivation of this name is from the word *abeo*, to rise or mount, in allusion to the towering habit of the tree.—Evergreen trees.

* *Leaves spreading equally round the branches.*

Abies excelsa, Don (lofty, or Norway Spruce Fir).—Leaves distributed regularly over the branches, mucronate, four-cornered, solitary, of a deep grassy-green colour, stiff, nearly an inch in length, wound up close to the branches. Cones from five inches to seven inches in length, cylindrical, pendulous, with slightly-toothed scales at tip, wavy, and of a light brown colour.

A long-lived, majestic tree, affecting the mountainous districts of the north of Europe, and frequently attaining to the height of 150 feet. It is furnished with long, drooping, fan-like branches, which are disposed in a regular feathery strata from top to bottom, and is considered by many to be very ornamental. No tree is affected more by the nature of the soil in which it grows. In dry exposed situations it becomes stunted, the branches at the bottom of the tree being almost devoid of verdure. In valleys, and on slopes of hills, where the soil is somewhat moist and deep, and in a north-east aspect, it shoots up amazingly, and covers itself with the richest verdure to the very surface of the soil. Under this aspect both the poet and painter have taken delight in contemplating it. This species seems to accompany Nature in her most striking and picturesque places. It is common throughout the mountainous parts of Norway, Sweden, Denmark, Switzerland, and France. Russia and Siberia, too, have it in considerable perfection embosomed between some of their highest mountains; and it is asserted, that in some instances it lives in degrees of cold which even the Scotch pine will not survive. Though not indigenous to Britain, this tree has been common in this country from the earliest times. It is evident, however, that in England it will not attain to anything like those dimensions which it assumes on the hills of Norway.

As a timber tree, the spruce fir is of the greatest value. It produces the white deal or white Baltic deal and Memel log of commerce; and in Britain an immense quantity of the wood is used in the shape of scaffolding poles, ladders, masts, planks, and deals. It is light and elastic, less resinous than the Scotch pine, yet lasting longer than that of any other species except the larch, over which it has an advantage in not being so liable to warp. In its living state, when young, it is admirably adapted to shelter other trees in exposed situations; and certainly no tree-nurse is equal to it in defending tender plants from the effects of frost. The resinous substance extracted from this tree, after being boiled in water and strained through a cloth, is the Burgundy pitch of our shops. An ordinary sized tree will, for the space of twenty years, yield, every other year, at the rate of 40lbs.; but, as might be expected, this process ultimately destroys the tree, for after that time it begins to decay, and is speedily taken possession of by myriads of insects. In a climate like that of Britain, variable and uncertain, this tree deserves to be propagated extensively, if it were only to furnish close evergreen branches, which are better than anything else in affording shelter to tender crops. The first crop of peas which have to brave the severities of winter, should be always protected with spruce branches. Peach, nectarine, plum, and pear blossoms, are often brought to maturity solely through their aid; and every careful and successful nurseryman knows how much he is indebted to them in protecting his laurel, cistus, bay, and aucuba cuttings; his evergreen oak, cistus, and arbutus plants; and a host of his seeds whilst vegetating during spring frosts. By them, therefore, a gardener may materially lessen his anxiety during the months of February, March, and April. In a pinetum where half-hardy plants are introduced, they must be of essential service. In Finmark, where nothing is lost, the tips of the branches are mixed with oats as food for horses.

But let us consider it in a higher office. As an ornamental plant, it is regular, symmetrical, and aspiring, very beautiful on a lawn where the soil is deep, loamy and free, because in such situations it ascends from the grass a complete pyramid of green. So far from its having anything of that clipped-like browsing line, by far too prevalent in our parks, it lays down its branches unreservedly on the grass, so that the stem is hid amidst a profusion of verdure. Of course, there are many trees of this species which do not look well. Huddled up amongst others, without its favourite soil, it becomes a miserable stunted thing, fit only to be burned; but, as already observed, in good damp soil, it is well entitled to be considered an ornamental plant. There are some splendid specimens, well feathered to the ground, near Brandon in Suffolk.

The cones of the spruce fir are ripe in January. They should be gathered from free growing trees only, and immediately placed on a kiln, with a moderate heat, for a day, and then taken and thrashed to pieces. In order that the seeds should be properly protected during this process, the floor on which they are laid should be formed like a causeway, with round stones, so as the seeds may have shelter between them. It is important also to keep the cones sufficiently thick on the floor, so that the flail may not reach the seeds. When sifted, they should be kept in a dry airy situation till the time of sowing, which is the third week of April for England, and the first week in May for Scotland. Light loamy soil is to be preferred to any other, and on no account should any manure be given.

The soil should be very finely raked, the beds made four feet and a half in width, and the covering only half an inch in depth. In these beds the plants may remain for two years, when they should be set out in lines nine inches apart, the plants in the lines being two inches apart from each other. In that state they may remain for two years more, when they may again be transplanted into lines fifteen inches apart; and the plants in those lines at intervals of four inches. When two more years in this last situation, they will be quite fit to be removed to their final situation. One year's seedlings are 1*s.* 6*d.* per thousand, and transplanted plants are from 6*s.* to 30*s.* per thousand. (1847.)

Varieties.—These are very numerous, and have been greatly increased by Continental nurserymen, who lay hold of the slightest variations in order to fill up their catalogues. The following are the chief varieties which some may consider worthy of enumeration.

A. e. nigra (black-leaved Spruce, or, as it is sometimes called, the red Fir).—The foliage is darker and more robust, and the wood is more resinous than the common tree. It seems to stand in the same relation to the species as the Highland pine, or *Pinus sylvestris horizontalis* does to the common Scotch fir, and is well worthy of cultivation.

A. e. carpatica (Carpathian Spruce Fir).—A vigorous growing variety, similar to the foregoing, but of lighter foliage. It is cultivated by Mr. Knight, Nurseryman, King's Road; and there is a fine specimen at Dropmore, about twelve feet high.

A. e. pendula (weeping-branched Norway Spruce Fir).—The common tree merely.

A. e. foliis variegatis.—A stunted plant, having the leaves blotched with yellow. It is cultivated for sale by Knight and Loddiges; and a tree in the garden of the Horticultural Society has been planted about twenty years.

A. e. Clanbrasiliana (Lord Clanbrasil's Spruce Fir).—A variety first introduced by Lord Clanbrasil, on whose estate it was found. It is of little use, except as a botanical curiosity, being a low compact growing bush, seldom growing over a yard high.

A. e. Clanbrasiliana stricta.—A variety, according to Loudon, found at Florence Court by the gardener, who represents it as forming a beautiful little shrub for a lawn.

A. e. tenuifolia.—A plant with slender shoots, and which, when grown up, will in all probability become more pendulous than the species. It is cultivated in the Exotic Nursery, King's Road.

A. e. pygmæa, identical with *A. e. nana* of some catalogues, and in all probability the same as *A. e. Clanbrasiliana.*

A. e. gigantea, not seen by the writer, but said to be more robust and stronger than the species.

A. e. monstrosa, a mere continuation of one of those monstrosities frequently found among spruces, laburnums, brooms, and exuberant plants of the Scotch pine, rhus, &c.

In Knight's Nursery, King's Road, are varieties, Nos. 1, 2, and 3, but as the plants are small, it is impossible as yet to speak with confidence regarding them.

Abies orientalis, Tournefort (Oriental Spruce Fir).—Leaves short, solitary, less than half the length of those of *A. excelsa*, imbricated, quadrangular. Cones ovate, cylindrical, with soft rounded scales.

Found by Tournefort on the mountains above the Convent of St. John's, south-east of Trebisond; and subsequently by Sir Gore Ouseley, on the precipitous and sublime banks of the Kur at Teflis.

Some botanists consider the plant as belonging to *A. alba*; and in Loudon's opinion it is a mere variety of *A. excelsa*. The tree is as yet uncommon in Arboretums; but there are young plants in Knight's Exotic Nursery, King's Road.

Abies alba, Michaux (white Spruce Fir).—Leaves spreading equally round the branches, quadrangular, three-quarter inch in length, of a glaucous hue. Cones of a lengthened oval shape, pendulous, with thin, even, undivided scales of a light brown colour.

Found with *A. nigra* in Canada, New Brunswick, and the district of Maine. The tree assumes the general form of the last mentioned species, though not its loftiness, and the bark of the older specimens is of a much whiter hue. The foliage is also characterized by a silvery cast, so that in the forest it has a much more cheerful appearance than either *A. excelsa*, or *A. nigra*. It is very hardy, but produces inferior timber; so that Mr. Lambert's recommendation to plant it extensively on the mountains of Britain has not been responded to. In this country it is short-lived, and frequently assumes the appearance only of a stunted shabby-looking tree. In deep free soil, at the bottom of a hill, with an eastern exposure, it puts on a luxuriant and beautiful aspect, and feathers itself close to the surface of the ground. As a timber tree, it is rejected; but the fibres of the roots, after being steeped in water, are split, and used in sewing together canoes of birch bark, the seams of which are coated over with its resin, in order to render them water-tight. This spruce has been in this country for nearly a century and a half, and it appears that even under the most favourable circumstances, it does not grow higher than sixty feet. Two years' seedling plants are common in the nurseries, and are to be had at 7*s*. 6*d*. per thousand. Farnham Castle in Surrey, Cool in Galway, Ballyleady in Down, White Knights, and Dropmore, are the places in Britain where it has attained the greatest perfection.

Variety. A. alba nana, raised in the Chester nursery, is a dwarf plant, a specimen of which is in the Chiswick arboretum. Many botanists and nurserymen pass it over as unworthy of distinction.

Abies nigra, Aiton (black Spruce Fir).—Leaves spread equally about the branches, or solitary, short, straight, and quadrangular, and of a dark dull green. Cones of an ovate-oblong form, nearly two inches long, and when ripe, of a dusky red colour. Seeds a little larger than those of the preceding species.

A straight-growing tall tree, introduced into this country in 1700. A native of swampy valleys in the most inclement parts of North America, growing chiefly in humid peat-like soil, where it is loose and deep. Notwithstanding what has been said to the contrary, it is believed that this tree is rather nice in the selection of the soil in which it grows freely; and that in mountainous districts where the ground is poor and thin, it would scarcely attain to a height beyond forty or fifty feet. Though the countries in which this tree abounds are diversified by hills, the finest forests are invariably found in valleys between those hills, and on the sides of mountains where the soil is good, and the situation somewhat sheltered.

This spruce forms a dense growing tree, perfectly pyramidal in its shape, and when covered with its young cones, a very beautiful picture. The scenery in Franklin's *Polar Expedition* affords good examples of the effect of this tree in landscapes; and for living illustrations, the reader is referred to Longleat, Pain's Hill, and Finborough.

The timber of this tree is of the greatest use in America, being strong, light, and elastic, not so good for flooring as the *Pinus Strobus*, but yet extensively employed in the dockyards, especially for the yards and knees of vessels. It is also exported to England, and used in our manufacturing towns for making packing boxes. The essence of spruce is extracted from the young branches of this tree; and it is from this species that the well known spruce beer is made. Young plants are plentiful in the nurseries, and those which are two years old, are to be had at 10*s*. per thousand. Such as are four years old, having been two years transplanted, are the fittest for waste lands. It is a mere waste of time and money to plant this tree on soil which has not been loosened (trenched) to the depth of two feet. Those who are in the practice of planting larch and Scotch firs on hard mountain land, which has never been prepared, may deem trenching an unnecessary expense. Experience, however, will undeceive them in this respect. Recent experiments go to show that this tree is well adapted to grow in the immediate neighbourhood of the sea.

Abies rubra, Poiret (red Spruce Fir).—Leaves equally distributed round the branches, awl-shaped, slender, and with sharper points than the foregoing. Cones larger and redder than those of *A. nigra*, and more resinous, and having notched scales. A tree very much resembling *A. nigra;* and it is very questionable if it is entitled to be considered distinct. Its wood is as good as that of the foregoing, and its rate of growth in this country is the same. One of the finest specimens in England, is at Hackress, in Yorkshire, where it is sixty-five feet high. A variety called *cærulea* has been originated by Mr. Booth, of the Flötbeck nurseries; and along with it, Mr. Knight of King's Road propagates a variation called *gracilis*. These latter are propagated by cuttings only.

Abies Smithiana, Wallich (Smith's Spruce Fir).—Leaves somewhat compressed, slender, straight, sharp pointed, pale green, somewhat glaucous, arising from a faint silvery line in the grooves. Cones solitary, pendulous, ovate-oblong, seven inches long, with round brown smooth scales.

A beautiful Himalayan tree, quite as hardy and growing as freely in Britain as the common spruce. It is beyond any question that this is one of those plants destined to occupy a prominent place in the English Arboretum, and in woods; for it is not only very ornamental, but it is reputed as being a tree which produces excellent timber. The writer has had cones and seeds sent direct to him from the Himalaya, and two years' seedlings in his nursery are quite equal to those of the common spruce of a like age. It promises to have something of the gracefulness of the Deodar, the tips of the branches assuming a drooping direction; and altogether the tree promises to have nothing of that stedfast gloom which is characteristic of several trees of the genus. Plants from four to six inches, are 6*s*. per dozen. (1847.)

* * *Leaves flat, glaucous beneath, two-rowed, or nearly so.*

Abies Douglasii, Lindley (Douglas's Spruce Fir). —Leaves spreading almost equally round the branches, or imperfectly two-rowed, silvery beneath, and blunt. Cones terminal, ovate-oblong, bright brown, with round concave smooth scales. Seeds of an oval shape, bright brown.

A magnificent tree, discovered by Douglas, in immense forests, from 43° to 52° north lat. in North-west America, and one with regard to which British Arboriculturists might well evince some interest. The opinion of Dr. Lindley, given some years since, to the effect that it would suit this climate, and prove a valuable tree, is, so far as experience goes, correct; for there are already some fine trees scattered throughout the country, which are producing cones in abundance. According to Douglas, the trunks of this species in its native forests are from two feet to ten feet in diameter, and from 100 feet, to 180 feet in height; and he mentions, that a stump which he found near Fort George, on the Columbia river, exclusive of the bark, and at three feet from the ground, measured 48 feet in circumference. On the banks of the Columbia, and in the other districts of North-west America where it prevails, the trees are to a great height devoid of branches, the top being of a conical shape, and the bark of a greyish brown, very rugged. In England, where it is yet planted only as an ornament, it is apt to become bushy like the Cedar of Lebanon, and to throw up several leaders; but when it is planted in groups, at about four to five feet apart from each tree, it will be found to assume a much better character in the eye of the timber merchant. A tree ten years old grows in this country at the rate of eighteen inches a year. In Northumberland, at Whitfield Hall, which is rather an ungenial climate, being 750 feet above the level of the sea, it has reached the height of 40 feet; the circumference at 2 feet from the ground, is 3 feet and 6 inches, the length of some of the branches near to the ground being 14 feet, and the circumference of the branches at bottom, 90 feet. It is thickly furnished with luxuriant branches from the ground upwards, and Mr. Ord, in the *Gardeners' Chronicle*, observes, that "it would certainly have been 5 or 6 feet higher, but from the misfortune of its having twice lost its leading shoot." Mr. Ord further adds that, "three years ago, a shot from a gun pierced the leading shoot, and this year (1846) a severe hail storm broke it down. In one respect, I am more fortunate than Sir C. Lemon, at Carclew, for I have fifty fine young plants raised from the seed of last year, but which had a narrow escape from death by the same hail storm that broke the leading shoot of their parent, and were only saved by the gardener rushing out with a hand-glass; they would otherwise all have perished. I have two or three fine plants raised from layers, which seem to be putting out shoots on all sides, and growing well and upright. There are no cones upon the tree this year." A large specimen is in the garden of the Horticultural Society, and there is another fine tree at Dropmore. In the pinetum at Rozelle, Ayrshire, this species grows luxuriantly.

Though unquestionably producing valuable timber in its native country, there is no evidence as yet to establish its claim when compared with other timber trees in this country, Lindley has given it as his opinion, that it is "likely to prove more valuable than even the larch itself." Plants one foot high are 7*s*. 6*d*. each.

Variety. *Abies D. taxifolia.*—A variety with foliage resembling the yew, raised from seeds received from the late Mr. Thomas Drummond, after the Arctic expedition. An upright growing tree, both stem and side branches being straight. Leaves longer than in the species, and of a much deeper green. The finest tree of this variety in this country is in the Edinburgh Botanic Garden, and young plants of it are to be had at Knight's, and Loddiges'.

Abies Menziesii, Douglas (Menzies's Spruce Fir). — Leaves very short, acute, whitish beneath, almost regularly spread round the branches. Cones oblong, with thin, ovate ragged scales; the cone nearly three inches long.

A native of the northern parts of California, where Douglas discovered it. In its general appearance it resembles *A. Douglasii*, but it does not attain the altitude of that tree. It was named by Douglas in honour of his friend, Archibald Menzies, Esq., the botanist. The wood of the tree is represented to be very valuable, probably as much so as that of *A. Douglasii*, and from the great numbers of it which are cultivated throughout Scotland, there is no doubt of its being hardy enough for Britain. The remarks of Mr. Locke of Rozelle, on this species, are particularly worthy of notice. "This beautiful Spruce," he says, "in one situation, with us, is thriving well, making shoots of two and three feet a year; while in another situation, within a very short distance, it is not doing well. In the first case, the situation is shaded, and more damp, while the other is duly exposed to the sun, and upon a very dry bottom. I have remarked, that all plants belonging to the spruce and silver firs, delight in deep, damp, and shaded situations, especially when young; and I conceive the reason to be this,—that on light soils with open exposure, the growth begins earlier, rendering it liable to injury from spring frosts." Fine specimens may be seen in the Chiswick arboretum, at Highclere, and Hendon Rectory.

Abies canadensis, Michaux (Canada Pine or Hemlock Spruce Fir). Leaves flat, solitary, two-rowed, or nearly so, downy when young, with rough, serrated margins, of a beautiful light green, with silvery lines on the under side. Cones small, ovate, a little longer than the leaves, hanging on the extremities of the branches. Scales round, smooth, and entire at the margins.

A native of the bleakest parts of the new world, as far north as Hudson's Bay, in lat. 51°. The vast evergreen forests of Nova Scotia, New Brunswick, Vermont, and the elevated districts of New Hampshire, are chiefly of this tree; but in those immense tracts it does not assume the graceful outline by which it is so easily recognised in this country, for when old it becomes stunted, and in many instances shattered and broken by snow lodging on its rigid branches. Towards the south, it becomes scarce, and is there found only on dark and humid exposures. Under its best aspect, it forms a noble tree, rising to the height of 80 feet, with a trunk about 3 feet in diameter at the surface of the ground.

American writers represent its wood to be indifferent; and in that country, where so much wood is used for external coverings, its decaying so rapidly when exposed to the atmosphere, forms a material objection to it. However, when guarded from humidity, it is said to last as long as any other pine, so that large quantities of it are consumed in the shape of laths for the inside of walls. The bark is valuable for tanning, and is by many considered more valuable than that obtained from the oak.

As an object on the lawn or pleasure ground, this tree is well entitled to be considered ornamental. It is a dense grower, yet its spray falls about it in elegant flakes; the colour of the foliage is of a cheerful silvery hue, unchangeable; and therefore, amongst evergreens, occupying that place which the birch and weeping willow do amongst deciduous plants.

It is raised from seed annually imported from America, Germany, France, &c., and even in this country some old trees produce cones. The seeds are sown in the middle of April, in free loamy soil, covered to the depth of a quarter of an inch, and in those beds the plants are allowed to remain for two years previous to being transplanted. Two years seedlings are from 40*s*. to 50*s*. per 1000.

Abies dumosa, Lambert (bushy Alpine Spruce Fir).—Leaves flat, solitary, turned one way, linear, obtuse, with a whitish bloom underneath. Cones solitary, ovate, erect, terminal, small, with ovate blunt scales.

A fine tree, very much resembling *A. canadensis*, attaining the height of 80 feet, and found in the northern parts of India, in Nepal, Butan, and surrounding districts. The trunk, to the height of 20 feet, is free from branches, and it is covered with an ash-coloured brownish bark. The leaves are so very deciduous, that Wallich states that the slightest shake of the branch is sufficient to detach them. The wood is bad, and is rejected by the natives, chiefly on account of its liability to warp. This plant is not yet in the catalogues of the first London nurserymen, and the presumption is that it is not to be had in England. There is little doubt of its proving quite hardy in this country.

Abies obovata, Don (obovate-leaved Spruce Fir).—Found in the Altaic Mountains, and in all probability a variety, or variation only, of *Abies Smithiana*. Cones drooping, cylindrical, with abruptly dilated scales. The tree is not yet to be had in England, but it is sufficiently hardy for this climate.

Abies Mertensiana, Bougard (Mertens' Spruce Fir).—A tree mentioned by Bougard, in his work on the island of Sitcha, on the western coast of North America, but unaccompanied by any description.

Three other species or varieties will be found in Knight's Exotic Nursery, under the names of *elegans, laxa, viminalis;* and also a fourth species, said to be from New Holland. Mr. Knight himself expresses a doubt with reference to all these; and until they are better known, no certain opinion can be given concerning them.

The four following kinds have to be added from books and manuscripts, being, as Lindley says, "almost unknown."

Abies Kæmpferi.—A native of Japan, found wild upon the mountains of Fako; called by the natives Leosi.

Abies Thunbergii.—A native of Japan, and cultivated in the city of Jeddo.

Abies Morni.—A native of Japan, the wood of which is in great estimation on account of its whiteness and fine grain.

Abies Torano.—A native of Japan.

Abies Araragi.—Also a native of Japan, producing brown wood, used for various domestic purposes.

The foregoing is one of the most important sections of Coniferæ. From the regularity of growth assumed by most of the species it will at once appear that, viewed merely as ornaments, pruning them is a most dangerous experiment; and when it is considered that a few cuts will cause them to part with a great deal of their resinous sap, the practice should by all means be discontinued.

There are no trees perhaps which will better repay the exercise of a little judgment in selecting spots of soil most suitable for them. This fact is abundantly clear from the difference of growth and appearance exhibited by the common spruce, which may be made either to exhibit the most unsightly appearance, or the most beautiful and luxuriant garb which vegetation puts on. A damp, free, loamy soil appears to be most suitable for all the individuals of the Abies family; and as recommended in other instances, the trenching of the soil is a great point in their favour.

It is but lately that attention has been directed to the adaptation of trees to certain situations. The vast and almost immeasurable tracts of waste land lying along the sea-shore were, until a few years since, considered as shut out from the pale of vegetation; and hence we find such districts bare, treeless, and uninviting. The black spruce (*Abies nigra*) has been found to brave the effects of the sea air admirably; and for such places it may be confidently recommended. It not only stands well itself, but from its thick evergreen spray, it is well fitted to shelter other less hardy kinds, which without such a nurse could not be introduced.

It is the fashion now-a-days to propagate great quantities of the rarer kinds of Spruce Firs by cuttings; but this practice is censurable. The trees never assume the outline and vigour of seedlings; and it is very questionable if they ever partake of that rigidity of fibre exhibited by the wood of such as have been raised in the natural way. If so, how is it that they are so short lived?

According to the views of some botanists, the genus Abies is made to include, beside the Spruce Firs, three other groups known by the popular names of Silver Fir, Larch, and Cedar. The question is not a very important one, since the groups are on both hands held to be distinct; but as they are most commonly recognised in this country as distinct genera, and are better known under the names they thus bear, we have thought it desirable, chiefly on this account, to prefer the separate arrangement. Under this plan, the Silver Firs bear the generic name of Picea, the Larches, that of Larix, and the Cedars, that of Cedrus; while the genus Abies is limited to that group of species commonly known as the Spruce Firs.

It may be worth while here to add some of the common characteristics by which these groups may be distinguished. It will be seen that they consist chiefly of features of habit and appearance, the real differences—those of structure—upon which the distinction of genera should rest, being very slight, if at all existing:—

Abies consist of species, whose cones are more or less conical, and in all cases *pendant;* the leaves are evergreen, and *scattered* in their insertion, that is, they grow out singly from the branches—not in tufts, nor two ranked.

Picea consists of species which bear *erect* cones, mostly long, and generally cylindrical; the leaves are evergreen, and *two ranked.*

Larix consists of species with small ovate-conical erect cones; the leaves are *deciduous,* and grow in little tufts or branches.

Cedrus consists of species which bear large erect cones; the leaves grow in little tufts, but they are *evergreen.*

PICTURESQUE SKETCHES OF CREATION.*

THE difficulties which present themselves to the mind when we speculate on the creation of this vast universe, or inquire into the probable or possible origin of the globe we inhabit, have given rise to numerous theories as wild and incomprehensive as can be imagined; and when we have learned all we can learn, we are lost in the contemplation of our own insignificance, and of the vast magnitude of the subject we would grasp, and its distance beyond the reach of our finite understanding. Geologists have endeavoured to supply a theory that will reconcile their facts with the origin of the globe. As we learn much of the history of the ancients by the monuments they have left behind them, so the geologist endeavours to compass the history of the creation by the antediluvian remains which annually, nay, daily come under their notice; but even the most intelligent of them are yet at an immeasurable distance from the truth, though, to uphold the science of historical geology, (if we may be allowed to use the expression,) a theory or foundation of some kind is necessary, and it is accordingly supplied. The author of the present volume has collected many valuable facts, and he has endeavoured to make them subservient to the view which he takes of the earth's origin and gradual development. The Mosaic description of the creation so warps the mind of many who do not make allowance for anything figurative or imperfect in the original record or its translations, that they recoil with horror from an inquiry which seems to involve a doubt as to the genuineness of the Bible;—we say seems to involve a doubt, because in truth it does not raise a dispute as to the important facts stated in the book of Moses. "In the beginning" God created the earth, we are told, and this, be it remarked, is without a date; the beginning might have been millions of years before the work of creation that concerned man. Then we are told that the earth was without form, and void. The geologist makes much use of the period in question,—before life or animation existed on the face of the earth,—before there was an animal or a vegetable; and the boldest of the writers on the subject—(and some of them go extreme lengths to reconcile matters with their own reasoning faculties)—the boldest question not the fact of the creation, because it is no less the work of the great Creator, be the means employed what they may. Our author, in this case, speculates on the earth having been once a ball of matter on fire and in a state of fusion. He says:—

"Judging from the general appearance of the solar system, and combining the result of astronomical observations on distant bodies in the universe with the appearance presented by various rocks on the earth's surface, it seems not unlikely that, at a very early period of its history, our globe existed as an intensely heated body in a fluid state, (the fluidity being the result of igneous fusion,) and that it gradually cooled at the surface, perhaps by exposure in space, contracting in dimensions as it cooled and hardened. In this manner, it may be, a succession of thin solid crusts were formed, each in succession shrinking and cracking, until at length, when a certain balance was arrived at between the thickness of the crust, the rate of cooling, and the amount of internal heat, there would be left a rough uneven surface, having many elevations and depressions, its temperature being sufficiently reduced to allow of the existence of some such atmosphere as now surrounds it, and also permit the permanent presence of water in a fluid state reposing in the hollows, and forming seas, lakes, and oceans. During the whole of this time, and until the existence of water in the liquid state, and the establishment of a sea, and perhaps long afterwards, it is likely that there were no living beings on the earth; because, so far as we know, neither animal nor vegetable can exist, and perform its functions, at the temperature of water actually boiling,—although, at a temperature not much short of that, some small animalcules, and even some animals of higher organization, would seem capable of enjoying life. Thus, therefore, according to this view,—and the reader will understand that it is merely offered as the most probable explanation of certain appearances observed,—the first period of the existence of the earth as a planet was marked by a chaotic state of igneous fusion, and characterised by frequent disturbances of the surface consequent upon cooling from such a state. Let us consider for a moment what kind of rocks are exhibited to us when we examine these earliest records of our globe, and let us see also how far we are able to examine them.

"In the first place, we often find, as the basis of all other rocks in mountain chains, and throughout some extensive tracts of country, a well-known rock called *granite;* a rock whose structure is crystalline, and which bears strong marks of having cooled slowly from a state of intense heat. This rock is found in all parts of the world, and sometimes in widely extended masses."

There are more extraordinary theories than this; but to satisfy the minds of our sceptical friends, we may say the world was not the less the handywork of the Creator, if thus produced, than if called into existence in its present form. Besides these unquestionable evidences of internal fire, witness the volcanoes, and external evidences of fusion in the various metals in the state that fire alone could leave them: however, this is digressing,—the author is quite capable of working out his own case without our assistance, If among the facts produced by geologists, we are shown things that are incredible unless we witness them, and yet they are pointed out that our own senses may be exercised for our conviction, we may give credence to much that they say, not so well within reach of our observation. For instance, when they tell us that enormous rocks are formed by the secretions and remains of certain minute animals, that mountains are raised by the mere living and dying of myriads of small creatures, the careless observer or the non-observer may feel indisposed to believe it; but there is no more doubt of it than there is that the Pyramids of Egypt were built by men, though we did not see them in hand. We did not see the coral reefs building any more than the Pyramids of Egypt; but there they are with the evidence on every inch of vast mountains; and we see others now in progress, and rising so rapidly as to occasionally make it necessary to alter our navigation charts;—a coral rock under water, out of all reach of vessels, within the memory of man, becoming so augmented as to cause the loss of vessels by striking, where, a comparatively short time previous, there was no danger within reach. Speaking of the accumulation of rock from the mere work of small creatures, individually as nothing, the writer says:—

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* The Ancient World; or, Picturesque Sketches of Creation. By D. T. Ansted, M.A., F.R.S., F.G.S.; Professor of Geology in King's College, London, &c. London: John Van Voorst, Paternoster Row.

"The prodigious extent of the combined and unintermitting labours of these little world-architects must be witnessed, in order to be adequately conceived or realised. They have built up four hundred miles of barrier reef on the shores of New Caledonia; and on the north-east coast of Australia their labours extend for one thousand miles in length; and these reefs may average, perhaps, a quarter of a mile in breadth, and one hundred and fifty feet in depth, and they have been built amidst the waves of the ocean, and in defiance of its fiercest storms. The geologist, in contemplating these stupendous operations, learns to appreciate the circumstances by which were deposited in ancient times, and under other conditions than those which now characterise our climate, those mountain masses of limestone, for the most part entirely coralline, which abound in many parts of our native island. The most abundant remains of corals in these masses are similar in their general nature to living species, but indicate animals very distinct from those living polyps which are now actively engaged in forming similar deposits on the undulating and half-submerged crust of the earth washed by the Indian and Pacific oceans. The limestones, which form a part even of the oldest formations, offer distinct proof, by their organic remains, that they are due to the secretions of gelatinous polyps, the species of which perished before those that formed the newer strata were created; and, as these polyps of the older period have been superseded by those of the present day, so these, in all probability, are destined to give way in their turn to new forms of essentially analogous animals, to which, in time to come, the same great office will be assigned,—to clothe with fertile limestone future rising continents."

The theories broached by the geologists suppose, that, from the period when the world first became habitable, even to the lowest order of animals and reptiles, there was a succession of new genera and species, and a decay of old ones, and that the various strata of the earth were formed each of the organic remains of various families, some altogether extinct, totally unlike anything known in the present day, and only figured and described from their bones, teeth, scales, impressions of their feet, localities, and other evidences, complete up to a certain point, but after or beyond that imaginary. Some of those remains are of gigantic proportions and monstrous formations. The races of animals existing at the periods of the various formations appear to have been very distinct, and in some geological works an attempt has been made to represent the periods by figures of the various living creatures supposed to exist at the time. In the work before us there is a frontispiece describing the vegetation of England during the coal period. These things being, in part, accomplished by analogy, drawn from fragments actually found, may be pretty nearly accurate. It is quite clear, from the discoveries of organic remains, that all the animals in the creation were not introduced at once, and as clear, that with the animals were also introduced the vegetation or other food and circumstances necessary for their existence; it is also clear, that as whole families, genera, and species have become extinct, the circumstances necessary to their existence have been changed. There are those who, referring to the Mosaic records, find, or satisfy themselves that they find, a sufficient cause for all the effects spoken of by geologists in the simple but awful single occasion of the flood;—the overturning of mountains, the washing out of vallies, the various precipitates of different substances, the changing of vallies into hills, of seas into dry land, and *vice versâ;* but the geologist attributes the changes to time alone, and measures the different epochs by the various deposits. Thus, we find our author, in regular succession, dividing all time into different periods. For instance, the period antecedent to the introduction of life, and the deposits of rocks, on which there are no remains or evidences of a living creature having existed: then the period of existence of invertebrated animals as the most highly organised inhabitants of the sea; the Silurian rocks: next, the introduction of fishes; the characteristic animals of the second fossiliferous period; the Devonian, or old red sand-stone system of formations: next comes the appearance of land, and the introduction of land vegetables; the carboniferous system, and the close, as it is called, of—(we speak geologically)—the first epoch of creation, indicated by the magnesian limestone, or primary system of deposits. This epoch is the first of three great geological divisions of the world's history, and the commencement of the second is distinguished by the formation of what is called the new red sand-stone. Then came the marine reptiles, and other animals characteristic of the lias; then the gigantic land reptiles, ; the flying reptiles, and other animals characteristic of the Oolitic and Wealden formations. From this the author proceeds to the consideration of the inhabitants of the earth during what is called the cretaceous period, and a wind up of the secondary epoch, and the circumstances of its termination. All this is before the introduction of land animals, and the commencement of the so-called tertiary period, which is called the third or modern epoch; and herein are found the remains of extinct monsters, the skeletons and portions of which are to be found in our public and private museums, and are ably described in the remaining chapters of the work. An account of a mammoth we can hardly abstain from noticing. There is something particularly interesting in the fact of bodies being preserved in ice. The author says:—

"In the latter part of the summer of 1799, a native Tungusian fisherman, who was in the habit of collecting tusks for sale from among the blocks of ice and rubbish which had fallen from the cliffs, saw on the banks of Lake Oncoul, near the mouth of the Lena river, and projecting from the cliff, a mass of unusual form, but, from its shapeless appearance, he could make nothing of it. The year after, proceeding to his usual haunt, he noticed that this lump was somewhat disengaged and had two projecting parts; and towards the end of the summer of 1801, when he again looked at it, he found it to consist of the whole side of a gigantic animal having large tusks, one of which projected from the ice. So slowly do changes take place in these districts, that the next summer being rather cold, no alteration was to be noted; but in 1803 part of the ice between the earth and the monstrous animal was somewhat more melted than before, till the whole at length fell by its own weight on a bank of sand. Next year our fisherman came in the month of March, and cut off the tusks, which he soon sold for about the value of 50 roubles (about 7*l.* 10*s.*) Two years after this, in 1806, being the seventh year from the discovery of the carcase, these distant and desert regions were traversed by Mr. Adams, an *employé* of the Court of Russia; and his account of the rest of the history of this mammoth, the ancient elephant of northern Europe, is too interesting to be abridged, without the loss of much of its value as a vivid description of so extraordinary a phenomenon.

"Mr. Adams states, 'At this time I found the mammoth still in the same place, but altogether mutilated. The prejudices being dissipated in consequence of the Tungusian (who had fallen sick from alarm on first hearing of the discovery, because it was considered a bad omen) having recovered his health, there was no obstacle to prevent approach to the carcase. The proprietor was contented with his profit for the tusks, and the Jakutski of the neighbourhood had cut off the flesh, with which they fed their dogs; during the scarcity, wild beasts, such as white bears, wolves, wolverines, and foxes, also fed upon it, and the traces of their footsteps were seen around. The skeleton, almost entirely cleared of its flesh, remained whole, with the exception of one fore-leg. The head was covered with a dry skin; one of the ears, well preserved, was furnished with a tuft of hairs. All these parts have necessarily been injured in transporting them a distance of 7330 miles, (to St. Petersburgh,) but the eyes have been preserved, and the pupil of one can still be distinguished.

"'The mammoth was a male, with a long mane on the neck. The tail and proboscis were not preserved. The skin, of which I possess three-fourths, is of a dark grey colour, covered with reddish wool and black hairs; but the dampness of the spot, where it had lain so long, had in some degree destroyed the hair. The entire carcase, of which I collected the bones on the spot, was nine feet four inches high, and sixteen feet four inches long, without including the tusks, which measured nine feet six inches along the curve. The distance from the base or root of the tusk to the point is three feet seven inches. The two tusks together weighed three hundred and sixty pounds English weight, and the head alone four hundred and fourteen pounds. The skin was of such weight, that it required ten persons to transport it to the shore; and after having cleared the ground, upwards of thirty-six pounds of hair was collected, which the white bears had trodden in while devouring the flesh.'

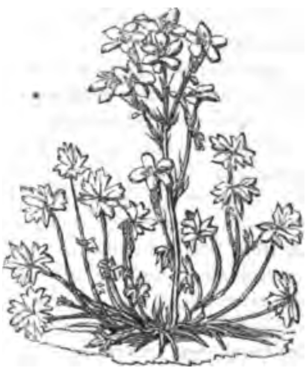
"A part of the hair of this animal is in the Museum of the Royal College of Surgeons of London. It consists of two sorts, common hair and bristles; and of each there are several varieties, differing in length and thickness. That remaining fixed in the skin is thick-set and crisply curled; and it is interspersed with a few bristles about three inches long, of a dark reddish colour. Among the separate parcels of hair, are some rather redder than the short hair just mentioned, about four inches long, and some bristles, nearly black, much thicker than horse-hair, and from twelve to eighteen inches long.

"Thus, then, we find that the elephant of the north temperate and Arctic zone was in most respects exceedingly like the species now inhabiting India, and, with the exception of a warm woolly and hairy covering, offered but little modification of structure. It was said by the native who discovered the carcase, that it had been so loaded with fat, that the belly hung down below the joints of the knees. The food of the creature was probably twigs and the branches of trees; and herds of these gigantic quadrupeds may possibly have migrated northwards in warm weather to the limits of arboreal vegetation, where from time to time individuals were buried either alive, or soon after death, in an icy shroud, and where the bones of those who died from natural or violent causes were also buried and preserved in the frozen gravel."

As we have before observed, there is in this book nothing that is inconsistent with revealed religion,—nothing opposed in reality to the Mosaic record of the creation, if we make due allowance for the changes, or at least modifications, in the generally accepted meanings of words. Indeed, the concluding words of the volume are impressive, and confirmatory of the view we have taken as to its general tone. After a general review, the author says:—

"Nor can it be understood as a less noble or less striking proof of creative power, that in this great plan, according to which our globe was created, everything should be foreseen and provided against, that everything should succeed in its time and place, that each organized being should perform the task allotted to it, and retire when its work was done, having assisted to carry on, without interruption and without interference, the great and uniform system. The perfect relation of each animal and vegetable to the time and place allotted to it is no less marked and certain than that admirable adaptation of every part in the individual, which is known to be so necessary to its comfort and even its existence. The whole system is one, it is the result of one mind, of one will, of one power. It is governed by a few simple laws, which no power but that which instituted them can possibly interfere with, and which, so far as we can judge, never have been interfered with. It is permitted to man to become acquainted by careful observation with some of the methods thus adopted, and the laws imposed; and the power being given, it is surely incumbent on him to employ it, humbly indeed, and cautiously, but earnestly and with an honest desire to discover truth, whatever that truth may be, or however it may clash with his preconceived opinions."

The work is illustrated with well executed engravings, like all similar works published by Mr. Van Voorst, and the binding is novel, substantial, and elegant.



SAXIFRAGA GERANIOIDES,

(Linnæus;)

GERANIUM-LIKE SAXIFRAGE.

SAXIFRAGA is a very extensive group of small hardy herbaceous plants, of which nearly or quite all are worth cultivating in gardens. There are at least two hundred reputed species, of which some are small tufted plants, with finely cut leaves, well adapted for covering rock-work, producing short flower stems, and always neat and interesting, even when not in bloom, from their close habit of growth, and lively green colour; others have broader leaves, more or less notched at the edges, and grow up with an erect branching flower stem from one to two feet high, with numerous, though small, and exceedingly pretty flowers; of these the London pride—one of the best of all for thriving in the smoky atmosphere of towns and cities—is a familiar example.

Saxifraga geranioides belongs to the former of these groups. It is a small tufted plant, having stiff reddish suckers, a red stem, growing six inches high, covered with glanduliferous hairs, and bearing a compact branching panicle of white blossoms; the leaves are on footstalks, reniform in outline, with from three to five lobes, the segments wedge-shaped, and deeply toothed; they are pubescent. The flowers consist of five oblong flat petals, of a white colour, arranged in something like a bell-shaped figure; the filaments are yellowish; the little stalks which support them, and the calices, are covered with clammy down; they are produced in profusion during the months of April and May. This plant is a native of the Pyrenees, and was introduced to our gardens in 1770. It is the same as the *S. paniculata* (Schleicher), and the *S. quinquefida* (Lamarck).

A variety which bears the name of *obtusiloba*, differs in having its leaves somewhat less toothed, and in being altogether less hairy; its flowers also are borne somewhat in an umbellate manner. This is a native of Switzerland, and is the same as the *S. geranioides* (Schleicher). Both are hardy perennials.

These saxifrages require no protection, and are among the best plants for furnishing a rockery; they are also very suitable for planting as edgings to walks, especially in shrubberies, and in cool, somewhat shaded, situations. They grow freely in any common garden soil, and should be planted early in autumn or in spring; in the former case they get well established before severe weather sets in. Spring planting, however, is perhaps the most certain, although unless very strong plants are used, and they are well watered, should the weather prove dry, they will not bloom well the first season, when planted late in spring.

When collections of these plants are put together in beds, it is desirable that each plant should have three or four largish lumps of stone placed around it, close to its branches, forming a rude embankment round it; within these stones the soil may be slightly elevated above the general level, so that the plants when so planted are less liable to suffer from excess of moisture. The same mode of planting is desirable for these and other small plants, when planted into a mixed border. Another advantage of this mode of planting is that the hoe and the rake are less likely to inflict injury on the plant when they are being used about it.

They are very readily propagated to any extent by dividing the plant, each little crown of leaves being capable of becoming a separate individual.

THE DROSERA, OR SUNDEW.

The Droseras are singular and interesting bog-plants, of which several are known to botanists, and three species inhabit our own country. The trivial name, Sundew, most probably originated in the peculiar appearance of the plants; the leaves are fringed or set with glandular hairs which exude, and each support a small drop or globule of a pellucid liquid like dew, which continues even in the hottest part of the day, and in the fullest exposure to the sun; hence, no doubt, the name of Sundew. It is called in Latin Ros-Solis, which is the same as the English Sundew. They are among the most curious of plants, and as such deserve attention, but not being at all showy, either in or out of blossom, it is chiefly for their curiosity that their cultivation can be recommended. Associated, however, with the fly-trap (*Dionæa muscipula*), the side-saddle flower (*Sarracenia purpurea*, and others) and plants of this character, a very interesting group is brought together.

The Droseras belong to a small natural order called Droseraceæ, nearly related in its botanical characters to the Fumitories, and the Berberries. From Fumariaceæ they differ in having *regular* and *symmetrical* flowers, in which the stamens *alternate* with the petals, and from Berberidaceæ they are distinguished (among other differences) by having regular and symmetrical flowers, in which the stamens are *opposite* the petals. These three orders form part of a group which Dr. Lindley calls the "Berberal alliance."

The character of the genus Drosera is thus defined:—*Calyx*, deeply five-cleft; *petals*, five; *stamens*, five; *styles*, three to five, deeply bifid; *capsule*, one celled, with three to five valves, many seeded. Small herbaceous plants, having leaves covered with beautiful glandular hairs. We shall chiefly confine our remarks to the British species.

Drosera rotundifolia, Linnæus (round-leaved Sundew).—A small herbaceous perennial, forming when out of blossom a roundish tuft three or four inches in diameter of orbicular depressed or spreading leaves, of a green or sometimes purplish colour, beautifully covered with red hairs, terminating in large glands, which secrete a viscid fluid, which retains insects which settle on them; the hairs on or near the margin of the leaves are usually longer than the others; the underside is smooth, and the stalks slightly clothed with simple hairs. From the centre of this tuft of leaves rises the erect flower-scape from two to six inches high, which is of a reddish colour and leafless, curved at the top, and there producing a one-sided raceme of small white flowers, each of which, as it successively occupies the apex of the perpendicular part of the scape, expanding, but if the day be not sunny it never expands at all, but the next above it does when it arrives at the apex; the flowers consist of five oblong petals, when expanded forming a little star. It is common in mossy bogs, and wet heathy ground. Flowers in July and August.

Drosera longifolia, Linnæus (spathulate-leaved Sundew).—A small herbaceous perennial, in size and habit much resembling *D. rotundifolia.* In this species however the leaves are spathulate, very obtuse, and grow erect on long glabrous petioles; they are greenish-purple, and furnished as in the others with pink glandular hairs. The flowers are small and white, and grow in a curved one-sided raceme, at the top of the scape, which in this species, instead of rising perfectly erect from the root, is curved or decumbent at the base, erect in the upper part. It is found in mossy bogs, and wet heathy ground, not uncommon, but more frequent in the south than in the north. It flowers in July and August. A variety having shorter leaves, and the flower-scapes shorter than the leaves, has been found in Ireland. Also called *D. intermedia*, (Reichenbach).

Drosera anglica, Hudson (great Sundew).—A small herbaceous perennial, but growing twice the size of the last. The leaves are numerous, obovate-lanceolate, obtuse, erect, on long glabrous petioles, of a pale purplish green, clothed with red glandular hairs. The scape grows erect from the root, and is curved at the apex, bearing there a one-sided raceme of small white flowers, which are produced in July and August. It is found in similar situations with the others, but less frequent; it is more common in Ireland. A variety with broader leaves, and affording some minute difference in the blossoms is met with in Scotland. It is also called *D. obovata*, and *D. longifolia* (Heyne).

The Droseras possess an acrid principle, which, according to Withering, is, in our native species, "sufficiently caustic to erode the skin;" but he observes, "some ladies know how to mix the leaves with milk, so as to make it an innocent and safe application to remove freckles and sunburn." He also adds, that the juice which exudes, unmixed, will destroy warts and corns. The Droseras also possess an acid property, and, according to some, are poisonous to cattle; they have been charged with having the power of causing the rot in sheep. It was at one time supposed that the leaves possessed the same irritable property as those of the fly-trap: but their mode of entangling the flies seems altogether different. Instead of collapsing as do the lobes of the leaves of Dionæa, and in this way enclosing the captive insect, the Droseras appear rather to hold them by the viscid property of their dew-like secretion. When an insect settles on any part of the leaf, it finds itself gummed down as it were by contact with this secreted fluid, and unless it be large and powerful, its struggles to escape serve but to fix it the more firmly, from bringing in into contact with a greater amount of the viscid matter, until at length, it becomes so surrounded by the curved hairs, which are fastened to its body by the sticky fluid, that its escape is entirely prevented, and it is accordingly held in that position till it perishes. Withering, however, related some instances in which the leaves had been observed to collapse or fold up, and thus enclose the insects.

Another property possessed by these plants is that of staining paper. In fact, some exotic species it is believed might be turned to account in this way. All our wild species have this property; but it is less powerful in *D. rotundifolia* than in *D. longifolia*, and *D. anglica.* Specimens collected for herbariums, after having been dried, still possess the same property, even to the extent of penetrating several contiguous sheets of the paper among which they are laid. Sir W. Hooker observes, that with him *D. rotundifolia*, and *D. anglica* retained this property for a number of years, so that the form of the leaves, scapes and flowers is distinctly represented through to the back of the sheets on which they are fastened, and also upon the backs of others which may at any time have been lain above them; and this, though the specimens are perfectly dry.

Respecting the special properties of particular exotic species, we find a record of the following:—*D. communis* of Brazil is said by Auguste de St. Hilaire to be poisonous to sheep. *D. lunata* has viscid leaves with glandular fringes, which close upon flies and other insects that happen to alight upon them; it is probable it would yield a valuable dye. It is also believed that some of the Swan River species of Drosera might be turned to account in that way, for every part of *D. gigantea* stains paper of a brilliant deep purple, and when fragments are treated with ammonia they yield a clear yellow. The bulbs of *D. erythrorhiza* and *D. stolonifera* have similar dyeing qualities.

The most convenient mode of cultivating them is to plant them in wide shallow pots, about three parts filled up with broken potsherds, and rough peat soil, on which a layer of living sphagnum moss is to be planted, and the Droseras planted among the sphagnum; the pots should be kept standing in pans or feeders of water. They may be kept in a frame, which should occupy a shady cool situation. In winter the plants may be slightly covered over during severe weather with a layer of loose litter; they do not require glass sashes; and during the remainder of the year they may be exposed to the free atmosphere, except during the summer, when during the middle of hot days they are the better for being shaded for a few hours. They will very seldom require re-potting, but occasionally a little fresh sphagnum may be put about them; or if at any time it should get displaced by any means, it should immediately be renewed. The pots ought constantly to stand in pans of water, and at least during eight months, including the summer half-year, the pans of water into which these pots are set should be deep enough for the water to reach two-thirds up the sides of the pots. They increase by seeds, which sow themselves; but the commoner of the British species may be obtained wild in almost any quantity with but little trouble.

The few exotic species which have been introduced may be grown in precisely a similar manner, the North American species being placed with the British ones in the frame, and the Cape and New Holland species set under a hand-light, in a shady part of the greenhouse.

THE DISGUISING OF FLOWERS.

THERE is a certain set of florists who inherit from the old professors a degree of ingenuity which we should be glad to see banished altogether from the science. It was at one time considered a clever feat to cheat a judge, and no sooner was an award made known, than a man who had done something clever in the way of fraud would boast of it, and taunt his competing friends with their want of judgment for not detecting the trick. As long ago as we can remember, a man made himself famous for glueing the centre petals of the ranunculus together so as not to expose the seed vessel; and there were not wanting those who followed the example on other flowers. The dexterity of some in dressing flowers gives them a decided advantage over such as know nothing about it, but it is difficult to draw the line between fair dressing and distortion, between legitimately placing the beauties of a flower in the best position, and altogether changing the features. Like all other evils that are permitted to grow, the dressing of flowers is occasionally carried to extremes; and this has induced us to take up the subject in earnest.

If the mutilation of a flower be permitted, great changes could be made for the better, even in a very bad one. If the application of artificial means to bloom a flower were objected to, there would be no stopping anywhere, for in truth three parts of the horticultural and floral skill may be said to be expended in the application of such means. The very shading of a flower from the sun, or defending it from the rain, is to a degree the application of artificial means.

There is no better test, then, to be applied, than the condition of a flower when shown. If one man could show a carnation without dressing, and another man mauled it about a good deal, the application of a glass to that flower which had received no dressing would show a beautiful enamel, or velvet surface of the most beautiful texture, while the bloom that had been pulled about and disturbed a good deal would show bruizes all over the surface, where the dresser had squeezed the petals and the texture of the surface. We have frequently seen fine stands of well-grown carnations and picotees, all laid very mechanically, but as dull as so many rags, while others that have hardly been touched were less formal, but brighter and better in all respects. Pinks are much of the same nature, and undergo, under some hands, much the same torture. But this family of subjects require dressing, and those who can dress best with the least handling, will assuredly exhibit best. The laws of dressing, as originally laid down and acted upon, were, that you may take as much as you like away, but must add nothing; and this latter restriction became very necessary when there were persons ingenious enough to remove faulty petals and replace them with fine ones from another flower. It must however be taken into consideration that if flowers are damaged materially by dressing, they tell greatly against the claims they might otherwise possess from their superior growth.

There are flowers which not only do not require dressing, but which in the eyes of a good judge would be altogether condemned for it. We have seen pansies ridiculously spoiled by the attempt to give them a property which they did not possess; for instance, flatness. The flowers have naturally been crumpled o puckered, and there has been an attempt t press them flat. We have seen the boxes o pansies brought to exhibitions with flat piece of glass laid on them, and the glass loade with weights of some kind; in some cases a few pennyworth of halfpence, in other cases stones; but, although this continued pressur flattened the flower, it only laid the pucker into doubles or plaits, and exhibited all th deformities which told against the flowe more offensively than if they had been permitted to show all the original defects.

The dahlia is a flower so rapidly increased so high in price while new, and so eagerl sought by amateurs, that any thing like a disguise in them was a serious evil. In a early day it was a common practice to cut ou the centres of those flowers which did not close up well, so that as the petals towards the centre were developed, they filled up the vacancy artificially made; whereas, had that part not been cut out, the hard scaly centre would have kept the opening petals from closing in. This was detected, and we may say punished, in early days; for flowers were shown as seedlings, that nobody could grow in the same state again, one of the fatal blemishes being a hard unbloomed, or a seedy, eye; and to use any contrivance by which a flower of this description could be shown at all perfect, was to make a flower not worth a sixpence, look worth half-a-guinea: the practice was repudiated, and if it be done now at all, it is a very rare occurrence; but there is another species of disguise which is quite as bad, although not yet so entirely exposed as to make it a fatal transaction. One of the worst faults of a dahlia is that of quilling too much, as it is called, which is, that the petals not unrolling themselves enough to develope the proper form of flowers, they are like so many pipes, and show only the outside surface. The kind of dressing to which we have now such an utter objection, is effected by means of a tapering piece of ivory, bone, tortoise-shell, or wood, which is thrust into the half-bloomed petals, and by degrees forced into them sufficiently to open the outer ends of the petal. This is done slowly, and by degrees; perhaps the dresser is thrust in a dozen times, and a little gentle violence used every time this is done, to open a reluctant petal. In a general way, the man who prides himself upon his dressing, thrusts the dresser into every petal; even the outside ones that are most open can be made more regular in an irregular flower than they will come of themselves. It is a prevailing fault with those flowers which have cupped petals, that those towards the centre do not open freely, and nothing looks worse than to see the backs of the petals turned over in front. The only question then is this, is it right or proper that a man, whose time is comparatively valueless, or whose pursuits will enable him to spend the time, should, by means of coaxing, and twisting, and pressing this petal one way, and that petal another, so alter the appearance of a flower, as to induce people to buy it when it is not worth the room it occupies? Now, last summer there were several flowers which were exhibited, very pretty as seedlings, and passed as fairish, indeed, as very nice flowers, among many amateurs, that when they were grown, were not even the same form. Miss Prettiman was a very taking variety, and would have sold by hundreds, but that a certain writer who is looked up to, condemned it by faint praise. He admitted it was "*a beautiful tipped flower*, but *showed the backs of the petals*;" and said it was "*not a compact double flower, but fills up*;" as much as to say, the flower looks pretty, but cannot do to show; but there were those present who thought it very beautiful as a show flower. Where is it now? who grows it? who is there that would not sell the dry root for sixpence if he could find a customer? There was a Mrs. Caudle, and Magician, much the same; shown pretty well opened, but in the hands of the public not worth a turnip paring; and, unless the dressing of these things is looked after by judges, and some penalty inflicted by rejecting them, we shall be always subject to this kind of imposition. In short, there is constant evidence that, unless the degree of manufacturing a flower has undergone be taken into consideration, at the same time as the appearance of it, the flower trade will be as fraudulent as ever, for it is lamentable to contemplate, that the very worst and most worthless things have been sent out by the best judges.

Let us therefore impress upon the minds of judges for the present season, the necessity there is to examine very closely the state of the flowers presented to them for their decision; to observe narrowly the general character; and to satisfy themselves that no artificial means have been applied to give them the appearance of being better than they are. There are circumstances which ought especially to awaken their suspicion; such for instance as meeting with a flower of a particular variety better grown, or in better condition than they usually see it, or a flower that they do not know among a general collection: both of these circumstances are suspicious, and require strict investigation. If a variety which usually has a particular fault is shown without it, there is a good reason for close examination. The other day a pansy, which usually has the under petal too long and indented, was observed in excellent condition and form; on taking a strong magnifier to it, we found the lower petal had been clipped, by which the fault was entirely removed. Last season a dahlia was shown whose disposition was to quill so much as to be hardly showable; but it was shown in a very pretty form, and hardly quilled at all: this had been poked about in every petal to force them open, and on taking a glass to it, it was seen that many of the petals had been split in the operation. Many other things equally absurd, but, nevertheless, equally fraudulent, call for the especial attention of judges; and as exhibitors who depend on these artificial means for their success are sure to object to judges who can and will detect and disqualify them, we should like to see every judge act upon the same principles, by which the over cunning people would be detected.

THE RHUS, OR SUMACH.

THE generic name Rhus, by which this family of plants is known, owes its derivation to the Greek *rhoos*, or *rhous*, which comes from the Celtic *rhudd*, or red, apparently in reference to the colour of the fruit and leaves of some of the species in the autumn. Sumach comes from *Simaq*, the Arabic name of the plant. Rhus belongs to the natural order Anacardiaceæ, and both to the Linnæan Pentandria Trigynia, and Diœcia Pentandria. It consists of deciduous small trees, shrubs, and climbing plants. There are a great number of species, of which those noticed are the most interesting.

Rhus Amela (Amela Sumach) is a Nepal deciduous shrub, growing four feet in height.

Rhus aromatica (aromatic Sumach) is a deciduous shrub, attaining the height of six feet; the leaves consist of three rhomboid-ovate leaflets; the flowers are small, yellow, in dense terminal spikes. It is a native of several parts of North America.

Rhus copallina (Gum Copal Sumach) has large pinnated leaves of from five to seven pairs of lanceolate entire leaflets, which are used as tobacco by the Indians of the Missouri and Mississippi. It forms a deciduous shrub, with stoloniferous, or creeping roots, and grows four or five feet high, bearing its yellow-green flowers in August. A variety called *leucantha*, has whitish flowers, and its roots are not stoloniferous.

Rhus Coriaria (hide-tanning Sumach) has pinnate leaves, of five or seven pairs of elliptical, toothed leaflets; the flowers are whitish green, in loose terminal panicles, and appear in July. It forms a small deciduous tree, of eight or ten feet in height, and is found in sunny rocky spots in the south of Europe. The seeds are used at Aleppo to provoke appetite, as those of mustard are in England.

Rhus Cotinus (Venetian Sumach) is a very desirable shrub, with obovate, entire, stiff, lucid leaves, which remain on till killed by frost, and render the plant almost sub-evergreen. It usually grows from six to eight feet high, and is exceedingly ornamental when covered with large loose panicles of elongated hairy pedicels of a reddish green tinge, which are produced at the end of nearly every shoot, forming a thready interwoven mass, often as much as six inches through; very few of these, which are properly flower stalks, produce any flowers; the flowers become abortive, and the pedicels, after the flowering time, lengthen and become hairy; the flowers are small, and of a pale purple or flesh colour. It inhabits the south of Europe, and Asia. The whole plant is used for tanning, and for dyeing wool, silk and leather of a yellow colour. About Venice it is used for dyeing black. Sometimes this plant attains a much larger size than has been named; a plant at Enville, in Staffordshire, several years ago, was upwards of forty feet in diameter.

Rhus glabra (glabrous, or Scarlet Sumach) is a deciduous shrub of nine or ten feet high, with pinnate leaves, of from eight to ten pairs of lanceolate glabrous leaflets; the flowers are greenish yellow. It is common in the woods throughout the greater part of North America. One variety of this, called *coccinea*, (or *elegans* by some,) has red flowers. The branches of *R. glabra*, boiled with the berries, afford an ink-like tincture. *R. viridiflora* is nearly allied to this.

Rhus pentaphylla (five-leafleted Sumach) is a deciduous shrub, growing to the height of ten feet; the leaves are pinnate, with three to five linear-lanceolate, and entire leaflets. The fruit is acidulous, and edible; and the bark dyes red, and is used in tanning leather.

Rhus pumila (dwarf Sumach) grows only about a foot in height, with leaves of many pairs of oval leaflets, and bearing greenish flowers in July. It is very venomous.

Rhus radicans (rooting branched Sumach or Poison Oak) is an exceeding poisonous plant, but which acts differently on different persons; some dare not even *approach* it. It is a deciduous plant, with a low shrubby stem, rising two feet or more in height, and extending twenty or thirty feet over the surface of the ground, rooting at the joints; the leaves consist of three large ovate, entire leaflets. It is found in many parts of North America, sometimes spreading on the ground; at other times climbing to the tops of the highest trees, its roots penetrating their bark. A pale brown sap, obtained from the stem, is of a disagreeable smell, and makes an indelible mark upon linen. There are two or three varieties:—*vulgaris*, *volubilis*, and *microcarpa*, all of which are climbing plants.

Rhus Toxicodendron (Poison tree Sumach) has leaves of three large, nearly oval leaflets. The plant approaches *R. radicans* so closely, that probably they are not distinct as species. It yields a yellow milky sap, which also forms an indelible ink for linen. It is a native of North America. There are one or two varieties of this.

Rhus typhina (fever or stag's-horn Sumach) is a deciduous tree growing from twelve to fifteen feet or more high, with irregular crooked forked branches, covered with soft velvety down, resembling that of a young stag's horn, both in colour and texture. The leaves are large, pinnate, of from eight to ten pairs of lanceolate leaflets. It occurs in most parts of North America, in some parts of which the wood is used for tanning leather;

and the roots prescribed as a febrifugal medicine. There are three varieties:—*arborescens*, assuming the tree form, and growing from ten to twenty-five feet; *frutescens*, of more shrubby habit, generally between two feet and ten in height; and *viridiflora*, which has green flowers.

Rhus venenata (poisonous, or swamp Sumach) is a deciduous shrub, or low tree, with pinnate, glabrous leaves, of five or six pairs of oval-lanceolate, entire leaflets. It is found in swamps in various parts of North America; there it attains twenty feet in height, but in cultivation it has not reached that size. It is very poisonous, both when touched and smelled to. The milky juice stains linen. The leaves are very ornamental in the autumn, as they die off, of an intense red or purple colour.

Rhus vernicifera (varnish yielding Sumach) is a small deciduous tree, with much the habit of the stag's-horn sumach,' but having large leaves, the five or six pairs of leaflets forming which, are ovate and entire. It is a native of Japan and Nepal, and is of robust growth. Thunberg affirms that the best Japan varnish is procured from this species, which grows in abundance in many parts of that country, and is also cultivated for profit. The varnish, which oozes out of the tree on its being wounded, is procured from stems that are three years old, and is received into some proper vessel; when first collected it is whitish, and of the consistence of cream, but on exposure to the air it thickens and becomes black. This varnish is very transparent, and hardens very much, but will not endure any blows, as it cracks almost like glass, though it will bear boiling water without injury. With this substance the natives of Japan varnish their door posts and window frames, their drawers, chests, boxes, scimitars, bows, teacups, soup dishes, portable stools, and, in fact, most of their articles of domestic furniture which are made of wood.

None of the species of Rhus are adapted to produce any striking effect in masses; indeed, the only two species which are worthy of being at all generally introduced are the *R. Cotinus*, and the *R. typhina*: the others are interesting merely where a collection of different kinds of trees is attempted, or where they may happen to be required for any special purpose. *R. Cotinus*, or the Venetian Sumach, is a very ornamental shrub, both in its habit of growth, and when adorned with its hair-like masses of flower stalks; and it may be introduced with advantage and effect in shrubberies near the front, where it may be within the range of the eye. When planted out singly on the lawn, it is also a very beautiful object, forming a dense mass, and extending, as it increases in age, to a goodly size and proportion. *R. typhina* (the stag's-horn Sumach) on the other hand is interesting from its singularity, both in the summer, when its large pinnated leaves are in all their freshness and vigour; in autumn, when they are changing to a warmer tint; and in the winter, when entirely destitute of these appendages, and exhibiting only its few large crooked stag's-horn-like branches. It may be planted either singly on the lawn, where it will be found to be a very interesting looking object, or it may be sparingly introduced in low shrubberies, where its stem would be hidden by the surrounding foliage, and its branches alone would appear above the tops of the shrubs. All or any of the other species, being suitable only to form part of a collection illustrating the nature and habits of trees and shrubs generally, may be planted out singly in the space set apart for that purpose. In any such collections formed for that particular object, the plants ought by no means to be dotted evenly over the surface of the ground devoted to them; but each particular family of larger or smaller extent, should be grouped together (not crowded) so as to afford opportunities both for studying and observing their particular forms, and also for the sake of affording facility for botanical investigation, if that should happen to be the gist of the proprietor. If this rule is observed, and a considerable space can be afforded between the particular groups, a considerable amount of pictorial effect may be produced, where otherwise the idea of an apple orchard would only be suggested. It is by no means essential, however, that each particular family of plants should be altogether isolated; while the members of one family or genus of plants are kept in contiguity with each other, several of these groups forming a "natural order," or even several smaller orders, having special affinity, may with strict propriety be congregated together into a larger group; and even the groups themselves, which form a particular main subdivision of the whole vegetable kingdom, may be so far connected as to show at once the degree of relationship which exists generally between them.

All the species of Rhus will grow in ordinary garden soil, though for the most part they prefer a dry loamy soil, or at least one in which there is no superabundance of moisture. *Rhus venenata* is an exception to this rule; it naturally inhabits swampy ground, and probably requires a similar situation to attain its full perfection; it does not usually grow in English gardens to the perfection in which it is naturally found, which is probably owing to this circumstance. The shrubby kinds may be increased by layering, some of them from suckers, and all the others from seeds.

AN ABSTRACT OF REPORTS, PAPERS, AND PROCEEDINGS OF THE HORTICULTURAL SOCIETY OF LONDON, WITH NOTES BY A PRACTICAL GARDENER.

THE ADVANTAGE OF SADDLE GRAFTING.—In pointing out the advantage of saddle grafting, which is not new, but which, I believe, has rarely been properly executed, it will be necessary that I describe the motion of the sap, as I conceive it to be, at the period when grafts are most advantageously inserted. The graft first begins its efforts to unite itself to the stock just at the period when the formation of a new internal layer of bark commences in the spring; and the fluid, which generates this layer of bark, and which also feeds the inserted graft, radiates in every direction from the vicinity of the medulla [pith] to the external surface of the alburnum [sap wood]. The graft is of course most advantageously placed when it presents the largest surface to receive such fluid, and when the fluid itself is made to deviate least from its natural course. This takes place most efficiently when a graft of nearly equal size with the stock is divided at its base and made to stand astride the stock, and when the two divisions of the graft are pared extremely thin, at and near their lower extremities, so that they may be brought into close contact with the stock (from which but little bark or wood should be pared off) by the ligature. I have adopted this mode chiefly in grafting cherry trees, and I have rarely ever seen a graft fail, even where the wood has been so succulent and immature as to preclude every hope of success by any other mode.—*From a Letter by T. A. Knight, Esq.*

REVERSE GRAFTING PEAR TREES.—The following is the substance of a letter from Mr. W. Balfour, gardener at Howick, to the Horticultural Society, as published in their *Transactions*:—This mode of grafting is intended for trained trees. The stock is trained according to the usual form of horizontal training; that is, with an upright stem, and simple horizontal branches right and left at regular distances, and trained parallel to each other. The reverse grafting consists in grafting on to these horizontal branches on the lower side, and in a reverse way, that is, with the shoots pointing at an angle of about 45 degrees towards the principal stem. These grafts furnish the bearing wood. The scions for this method are inserted in the same manner as in rind grafting, and by cutting off the greater part of the spurs of the branch intended to be grafted, the scions take readily, and shoot freely. The branches which are grafted must be wide enough apart to allow room for the growth of the grafts; and if they are too close together for this, every alternate or third one must be grafted and the others removed. The grafts may be of the same kind as the stock, or different kinds; they may be all of one kind or various. The usual defect observed in horizontally trained trees, viz. barrenness to some distance on either side of the main stem, while the extremities of the branches are fruitful, was the principal cause which led to the idea of reverse grafting. It promises to remedy this, and it also affords the advantage of growing a number of kinds of pear upon the same space of wall, for any desired kinds may be put upon the same tree. A full grown pear tree, bearing a moderate crop, in many kinds yields more fruit than sufficient to supply the dessert for a family, while the kind is in season; hence the advantage of growing more than one sort on a tree. The succession of pears is rendered more complete, where the same sort is worked on branches in different aspects.

THE USE OF CHARCOAL DUST.—The garden I superintend is a very wet, stiff soil, upon a strong clay, and without any declivity. For several years my crops of onions were nearly all destroyed by a grub, and by mouldiness coming on about their roots, at various stages of their growth; sometimes when they were about the size of what we call scallions, at other times when they were beginning to form a bulb, and even when the bulb was formed. I also tried several experiments to prevent the disease taking place, but none had the desired effect, until I made use of charcoal dust, (which is the refuse that is left at the bottom of a charcoal pit after the charcoal for use is taken out,) spread upon the top of the ground, about half an inch thick, before the seed is sown, (the ground being previously well dug and manured,) and merely scuffled in with the point of a spade, so as to mix the top soil and charcoal dust together. This secured excellent crops of onions, with not the least appearance of any infection. My first experiment was upon a bed fifty feet long, and five feet wide, prepared in the usual way; one half the bed was dressed with charcoal dust, the other half without it; the part on which the dust was laid had an excellent crop of onions, it remained quite clean and free from any disease, whilst the part to which the dust was not applied, was entirely destroyed by the grub and by mouldiness. The next year I determined to try the effects of the dust upon a larger scale; I therefore had the whole of the quarter prepared for onions, and divided it into eight beds of the same size as before; four of the beds were treated with dust, the other four remained without it. The result was the same as before; the beds where the dust was applied bore a good clean crop, whilst the others were affected. The charcoal dust ought to be kept quite dry. I have also found that the application of charcoal dust effectually prevents the clubbing in the roots of cabbages, &c. I had been accustomed to use lime fresh from the kiln for that purpose, and always with considerable advantage; but since I have made use of the charcoal dust upon different quarters of the garden, and any of the Brassica tribe has been subsequently planted there, the clubbing has entirely disappeared. I once planted a quarter with cauliflower plants, which never arrived at maturity, being very much injured with the club. The following summer I had the same quarter prepared for onions, with charcoal dust upon it; as soon as the onions were cleared off in October, I had it well dug over, and planted it immediately with early cabbages, which all arrived at maturity early, without the least appearance of clubbing.—*Letter by Mr. T. Smith.*

[Charcoal is a very powerful agent in *horticulture.* Of its efficiency in striking cuttings, there can be no doubt; and as an absorbent, it has been found of the greatest use, even in preserving potatoes supposed to be affected by the disease. It is also of much utility in the cultivation of potted plants; and the refuse of every kind incidental to a garden, when charred, forms a most valuable dressing for every kind of vegetable crop.]

COVERING THE NAKED BRANCHES OF FRUIT TREES WITH NEW WOOD.—It is a fact well known to horticulturalists, that the branches of fruit trees trained against walls and espaliers, after eight or ten years become naked for about a foot or two nearest the stem, which gives an unsightly appearance to the tree, especially when the branches are trained horizontally; and it is in general difficult to procure blossom spurs, or even wood shoots, in those situations, unless by training a new shoot from the main stem, which cannot always be procured. The idea struck me, that, if I interrupted the sap at a distance from the main stem by ringing the branches, shoots might be produced between the ring and the stem. In spring, when the blossom buds were about to burst, I made a ring to the extent of one-fifth of an inch, in the usual way, at the distance of two feet from the main stem, round a branch of a Jargonelle pear tree, trained horizontally, which branch had for several years been entirely bare both of fruit spurs and wood shoots; nor was there the smallest appearance of an embryo bud at the time of ringing. I soon found that a space to the extent of seven inches nearest the ring began to break into buds. The part of the branch nearest the stem, about seventeen inches, was without a bud; I therefore concluded that six or eight inches should be substituted in future ringings instead of two feet. Another experiment has confirmed this opinion. About the same time I made that on the Jargonelle I also ringed a branch of a Bergamot pear tree, at six inches from the stem, which produced me several prominent buds. The space which formed the ring is grown over in both branches.—*Letter by Mr. Street.*

[The ringing of the bark to induce fruit bearing, has been a common though not always a successful practice; but this operation to produce young wood below it has not been so common. It will no doubt have the effect in some cases. Recourse to ringing fruit trees, either to produce wood or fruit, can however be only regarded as a barbarous evasion of a radical error in their management. Healthy trees, planted in proper soil and properly managed, will not require this species of mutilation to induce fruitfulness.]

PEACH BORDERS AND WALLS.—The peach borders should be carefully prepared, by forming them of a sweet fresh soil; where the ground is not naturally such, the best possible is the upper spit of an old upland pasture. The bottom should be drained, where requisite, to free it from stagnant moisture, and should be rendered impervious to the roots, especially if the subsoil be at all wet. The border should also, where that sacrifice can be made, be left in possession of the peach-tree alone, and worked with forks only, to avoid injuring the roots; but as devoting so valuable a portion of the garden as the south borders to no other purpose, may not in many cases be expedient, it would be advisable to leave apertures at the bottom of the wall, through which the roots of the peach-tree may penetrate to the outside, and be there suffered to range unmolested. Brick walls are preferable to those formed of any other materials, as they are not only drier and possess a more equal temperature, but in consequence of their colour absorb and retain a greater portion of heat than most others. Copings proportioned to the height of the wall should always be laid on its top, as they not only protect the bloom, but keep the wall dry and warm, and so facilitate the ripening of the fruit and wood. Little or no manure should be given to the peach-tree while vigorous, or until weakened by age or bearing, and the object in pruning should not be to produce strong luxuriant shoots, but such as may be kind and fertile, which, completing their growth early in the season, will be well ripened. Such course of treatment, steadily pursued, will rarely fail to render the peach-tree healthy and productive.

CULTURE OF THE WILD POTATO IN THE HORTICULTURAL SOCIETY'S GARDEN. — The native wild potato of South America (*Solanum tuberosum*) is found growing in considerable quantities in ravines in the immediate neighbourhood of Valparaiso, on the western side of South America, in lat. 34½° S. The leaves and flowers of the plant are similar in every respect to those cultivated in England, and elsewhere. It begins to flower in the month of October, the spring of that climate, and is not very prolific. The roots are small and of a bitterish taste, some with red and others with yellowish skins. Two tubers of these from Mr. Caldcleugh, who received them from South America, were exhibited to the Horticultural Society in 1822. They were planted separately in small pots, and speedily vegetated; they grew rapidly, and were subsequently turned out into a border at about two feet distance from each other, when they became very strong and luxuriant. The blossoms at first were but sparingly produced, but as the plants were earthed up they increased in vigour, and then bore flowers abundantly; but these were not succeeded by fruit. The leaves, compared with specimens of several varieties of the cultivated potato, were generally rather of a more rugose and uneven surface above, with the veins stronger and more conspicuous below, but in other respects there was no difference between them.

The earth with which the plants had been moulded up had been applied in considerable quantity, so as to form a ridge, the sides of which were full two feet high; and about the month of August runners from the roots and joints of the covered stems protruded themselves towards the surface of the ridge in great numbers, and when they reached the light, formed considerable stems, bearing leaves and blossoms, so that at length the two plants became one mass of many apparently different plants issuing from all sides of the ridge. The appearance of these runners in such quantities induced a doubt as to the identity of the plant with our common potato, which doubt was increased when it was ascertained, that so late as the month of August no tubers had been formed by the roots; but all doubt respecting them was afterwards removed; they are unquestionably the *Solanum tuberosum*. The principal stems, when extended, measured more than seven feet in length; the produce was most abundant, above six hundred tubers were gathered from the two plants; they were of various sizes, a few as large or larger than a pigeon's egg, others small, rather angular, but more globular than oblong; some white, others marked with blotches of pale red or white. The flavour of them when boiled was exactly that of a young potato. The tubers lost all the bitterness of flavour which is attributed to them in the natural state, and their size increased remarkably; from which circumstances I am disposed to infer, that the original cultivators of this vegetable did not exercise either much art or patience in the production of their garden potatoes.—*Letter by J. Sabine, Esq.*

[The wild form of the potato plant is not unfrequently imported as a botanical curiosity; it does not widely differ from some of our cultivated varieties. Both white and purple flowered kinds have been thus imported. It is, however, not very certain that all the varieties now cultivated have sprung from one original form.]

NOTES ON FLOWERS AND FLOWERING PLANTS.

Hippeastrum breviflorum, *Herbert* (short-flowered Hippeastrum). — Amaryllidaceæ § Amarylleæ. — A bulbous plant with narrow strap-shaped leaves and a stout flower stem, bearing a few flowers at the top; the flowers are slightly tubular at the base, nearly two inches and a half long, deeply divided into six segments, white striped with red outside, and stained with yellow. A native of the southern provinces of Brazil. Introduced in 1836. Flowers in April and May. *Culture.* —Requires a stove; rich loam, good drainage, and careful watering; rest in winter; propagated by offsets.

Phycella Herbertiana, *Lindley* (Herbert's Phycella).—Amaryllidaceæ § Narcisseæ. —A bulbous plant with strap-shaped narrow, blunt-pointed leaves, and a flower-stem bearing a bunch of flowers at the top; the flowers have a short tube, and are divided into six narrow segments of a pale-red colour. A native of the pass Cambre between Valparaiso and St. Jago in Chili. Introduced in 1825. Flowers from May to July. *Culture.* — Nearly hardy in sheltered spots, as at the foot of a wall; sandy loam; total rest after flowering; propagated by offsets or seeds.

Alströmeria aurea, *var. Valparadisiaca* (Golden Alströmeria of Valparaiso).—Amaryllidaceæ § Alströmerieæ.—A tuberous-rooted herbaceous plant, producing annual stems, from two to four feet high, clothed with twisted linear leaves about four inches long by one in width, and terminated by about nine peduncles, each bearing three large flowers; the flowers are somewhat funnel-shaped, divided into six segments, of a rich orange-colour, streaked with bright red. A native of Chili, near Valparaiso. Introduced in 1836. Flowers in July and August. *Culture.* —Hardy; sandy loam; must be protected from snails and caterpillars; requires rest in winter; propagated by division of the roots.

VANDA LOWEI, *Lindley* (Mr. Low's Vanda). —Orchidaceæ § Vandeæ-Sarcanthidæ. — A magnificent epiphytal plant, with distichous, stiff, leathery, strap-shaped leaves, and throwing out large fleshy roots along the branches. The flowers are borne in racemes, which are pendulous and extremely long—often from eight to twelve feet—and covered with coarse very scabrous hairs: the blossoms are about three inches in diameter, and grow about five inches apart; they are pale lemon coloured, becoming deeper yellow with age, and are barred and blotched with bands and spots of the richest cinnamon, the lip shaded with cinnamon and purple; the sepals are hairy on the outside. A native of Borneo, growing on trees on the banks of rivers, thick forests, and other humid places. Introduced in 1847. Not yet flowered. *Culture.*—Requires a hot moist stove; to be placed on a block, or in an open basket, among moss and turfy peat; propagated by division of the plant. (128)

CEREUS GRANDIFLORUS MAYNARDI, *Paxton* (Lady Maynard's Cereus).—Cactaceæ § Cereidæ.—A hybrid cactus, with trailing angular succulent stems, and bearing large flowers of a uniform orange-red colour; the outer segments are long and narrow, the inner ones somewhat broader; the flowers open in the evening, and continue expanded about three days; they are produced freely. The plant is a hybrid, raised, in 1837, from *C. speciosissimus,* fertilised by *C. grandiflorus;* and owes it origin to Mr. Kenny, gardener to Viscount Maynard, at Easton Lodge, in Essex. The wood and spines are intermediate between the two parents, but, except in colour, the blossoms most resemble *C. grandiflorus. Culture.*—Requires a stove, and to be trained against a wall or trellis; loam and lime rubbish; propagated by cuttings. (129)

RUELLIA PURDIEANA, *Hooker* (Mr. Purdie's Ruellia). — Acanthaceæ § Echmatacanthi-Ruellidæ. — A moderate sized suffruticose plant, of erect habit, with glabrous branches, large, opposite, ovate-acuminate leaves, and terminal flowers growing in pairs, with a pair of large bracteas at their base; the flowers have a long curved tube gradually enlarging upwards, and divided into five nearly equal, and spreading, waved segments; the colour is a fine deep crimson-lilac. A native of South America(?) Introduced in 1846. Flowers at various periods of the year, and when quite young. *Culture.*—Requires a stove; sandy loam and peat; propagated by cuttings placed in a hotbed and sandy soil. (130)

MARSDENIA MACULATA, *Hooker* (spotted-leaved Marsdenia). — Asclepiadaceæ § Stapeliæ.—A strong growing climbing plant, nearly glabrous in every part, with thick stems, and very large, opposite, broadly-elliptical leaves, cordate at the base, and marked over the surface with pale yellowish spots of various sizes. The flowers are numerous, collected into dense hemispherical, almost sessile umbels, at the axils; they are rather fleshy, and of a dark purplish colour, greenish when young, so that the umbels have a mottled appearance. A native of the plain of Santa Martha, New Grenada. Introduced in 1840 (?) Flowers in June and July. *Culture.* —Requires a stove; rich loamy soil, and plenty of root room; propagated by cuttings in sand, in a hotbed. (131)

CALCEOLARIA AMPLEXICAULIS, *Humboldt, &c.* (clasping-leaved Slipperwort).—Scrophulariaceæ § Antirrhinideæ - Calceolareæ. — A small shrubby plant growing nearly two feet high, with cordate-ovate, acuminated, pubescent leaves, and terminal upright peduncles, bearing compound corymbs of good-sized deep yellow spotless flowers; the flowers are formed of two unequal lips, the upper one helmet-shaped, compressed, the lower one nearly the form of a horse's hoof, both being pressed together so as to close the mouth or throat. A native of Peru and Colombia. Introduced in 1846. Flowers in the summer months. *Culture.*—A greenhouse or half-hardy plant; light loamy soil; propagated by cuttings planted in slight heat. (132)

IPOMŒA MURICATA, *Cavanilles* (fine-leaved Ipomœa).—Convolvulaceæ § Convolvuleæ.— A handsome slender growing plant, with oblong fusiform tubers, and annual stems varying much in length, and not twining. The leaves, which have often been described as a whorl of narrow simple leaves, are sessile and multifid, divided into five or more very narrow spreading segments. The flowers grow in the axils, on very short peduncles, and have the lower part of the calyx muricated with small sharp tubercles; they are small, but of a delicate full lilac hue, inclining to rose. A native of Mexico and Colombia; and found in open grassy mountains of the Nivada de Santa Martha. Introduced in 1845. Flowers in September and October. It is also called *Ipomœa armata* (Rœmer and Schultes); *Convolvulus capillaceus* (Humboldt, &c.); and *Canta tuberosa* (Rœmer). *Culture.*—Requires a warm greenhouse; peat and loam; propagated by cuttings, seeds, or division of the old tubers. (133)

ECHITES FRANCISCEA, *Alph. de Candolle* (River Francisco Echites).—Apocynaceæ § Wrighteæ.—A handsome hothouse climber, the stems, leaves, and flower stalks of which are clothed with a sort of velvety hairiness, and bear rather large opposite, ovate-acute leaves, and racemes of eight or ten large salver-shaped blossoms, which are fragrant, and of a somewhat dingy purple, marked in the centre by a green star. A native of Brazil, in the desert near the River San Francisco. Introduced in 1845. Flowers in August and September. *Culture.* — Requires a stove; peat and loam; propagated by cuttings planted in sand under glasses. (134)

CATASETUM SERRATUM, *Lindley* (serrated Catasetum).—Orchidaceæ § Vandeæ-Catasetidæ.—An epiphytal plant, nearly allied to *C. maculatum.* The flowers in this species are pale green, with the convex part of the lip yellow, and they are without spots. It is said to be an abundant bloomer, producing long spikes of ten or twelve powerfully scented blossoms on each spike. It differs in some details of the structure of its flowers from *C. maculatum.* A native of the isthmus of Panama. Introduced in 1845. Flowers in August and September. *Culture.*—Requires a stove; to be potted high in turfy peat; propagated by division of the plant. (135)

DENDROBIUM VEITCHIANUM, *Lindley* (Mr. Veitch's Dendrobe).—Orchidaceæ § Malaxeæ-Dendrobideæ.—A beautiful epiphyte, with club-shaped stems, bearing two or three oblong leaves, and erect racemes of large mossy flowers nearly two inches in diameter, with dull yellow sepals, pure white petals, and the lip deep green, bordered with white, and richly marked with crimson veins. A native of Java. Introduced in 1846. Flowers in February (?). *Culture.*—Requires a moist stove; to be planted on a block of wood, or in an open basket; propagated by division of the plant. (136)

MACROMERIA EXSERTA, *Don* (long-stamened Macromeria).—Boraginaceæ § Anchusidæ.—A fine herbaceous perennial, growing from two to three feet high, with hairy stems, large lanceolate or ovate-lanceolate leaves, and bearing on the upper parts of the stem short axillary branches, each bearing several blossoms, which consist of a slender tube about two inches long, cleft at the end into five narrow segments about an inch in length, and of a dull pale yellow; the filaments and stigma project beyond the throat of the tube, as long or longer than the tube itself. A native of Mexico, near Tuspan, and Angangueo. Introduced in 1846. Flowers from August to October. *Culture.*—Half-hardy; sandy loam and peat; propagated by seeds, or by division. (137)

SACCOLABIUM MINIATUM, *Lindley* (vermilion Saccolabium).—Orchidaceæ § Vandeæ-Sarcanthidæ.—A small epiphyte, producing upright racemes of small gay vermilion or rich apricot coloured flowers, growing about ten together. The stems and foliage are not described. A native of Java. Introduced in 1845, and bloomed in one or two gardens. *Culture.*—Requires a hot moist stove; to be planted in an open basket, or on a block; propagated by division of the plant. (138)

TELIPOGON OBOVATUS, *Lindley* (obovate-lipped Telipogon).—Orchidaceæ § Vandeæ-Notylidæ.—A curious epiphytal plant nearly allied to *T. latifolius*, with a flower stem six inches high, and flowers an inch and three-quarters in diameter, of a bright yellow colour; the rachis is flexuose and winged; the petals are oblong and acute; the lip larger, obovate, and rounded at the apex. A native of Peru. Introduced in 1846. It has not yet (1847) flowered in the country. *Culture.*—Requires a stove; to be potted in turfy peat; propagated by division of the plant. (139)

BOLBOPHYLLUM LOBBII, *Lindley* (Mr. Lobb's Bolbophyl).—Orchidaceæ § Malaxeæ-Dendrobidæ.—A very handsome epiphyte, which has obovate-oblong leathery leaves, and produces its flowers singly on peduncles shorter than the leaves; the flowers are full four inches across, yellow shaded with cinnamon, spotted with light brown, and speckled outside with brown purple. A native of Java. Introduced in 1846. It does not yet (1847) appear to have flowered in this country. *Culture.*—Requires a moist stove; to be potted in turfy peat; propagated by division of the plant. (140)

PHYCELLA BREVITUBA, *Herbert* (short-tubed Phycella). —Amaryllidaceæ § Narcisseæ.—A bulbous plant with narrow strap-shaped leaves, and a flower-stem about a foot high, bearing a bunch of flowers at the top; the flowers have scarcely any tube, and are divided into six segments, nearly an inch and a half long, red without, yellow streaked with red inside. A native of Chili. Introduced in 1835. Flowers in June and July. *Culture.*—Nearly hardy in a dry sheltered place; sandy loam; total rest after flowering; propagated by offsets or seeds. (141)

STAPELIA PULVINATA, *Masson* (cushion-flowered Stapelia).—Asclepiadaceæ § Stapeliæ.—A decumbent dwarf under-shrub, with succulent four-cornered, furrowed, articulated green branches, having brownish scaly teeth on the angles: the flowers are very fetid, and are produced near the base of the branches, on stalks two or more inches long; they are four inches over, and are divided into five spreading segments, each of which is densely edged with brownish hairs, the centre being filled by a dense cushion of reddish hairs; the segments are streaked and mottled cross-ways with blackish brown, on a dirty yellow ground. A native of the Cape of Good Hope, among bushes at Camiesberg. Introduced in 1795 Flowers in August and September. *Culture.*

—Requires a greenhouse; loam, sand, and brick rubbish; very little water in winter; propagated readily by cuttings. (142)

COOPERIA PEDUNCULATA, *Herbert* (stalk-flowered Cooperia).—Amaryllidaceæ § Amaryllеæ.—A bulbous plant, with long narrow strap-shaped glaucous leaves, and a stem eight inches high bearing a solitary fragrant flower, which expands at night; the flower is about two inches long, white tinged with blush at first, with red stripes outside when fading. A native of Texas. Introduced in 1835. Flowers from July to September. Known also as *Sceptranthes Drummondi* (Graham), and *Zephyranthes Drummondi* (Sweet). *Culture.*—Nearly hardy; sandy compost; requires thorough drainage, and protection in severe weather; propagated by offsets from the old bulbs, or seeds. (143)

ZEPHYRANTHES SESSILIS, *var.* *Ackermanni* (Ackermann's sessile Zephyranth).—Amaryllidaceæ § Amaryllеæ.—A bulbous plant, with long slender semi-cylindrical twisted green leaves, and a slight stem, three or more inches high, supporting one large flower, which is about two inches long, composed of six segments, expanding flat in bright sunshine, red outside, pure white within. A native of Guatemala. Date of introduction uncertain. Flowers in May and June. *Culture.*—Nearly hardy; very sandy soil; must be taken up and kept in dry sand during winter; propagates freely by offsets, and occasionally by seed. (144)

STATICE SINUATA, *Linnæus* (scollop-leaved Sea Lavender).—Plumbaginaceæ § Staticeæ.—A dwarf herbaceous perennial, with bunches of leaves growing close to the ground; these are somewhat lance-shaped, bluntly and deeply indented, and toothed on the edges; from these rise the stems a foot and more high, triangular and winged at the angles, branching near the top; the flowers are produced in almost flat heads, and consist of a bright blue calyx, within which rises the tubular white corolla, with a five-parted spreading limb. A native of Sicily, Syria, and Africa. Introduced in 1629. Flowers from June to October. *Culture.*—Requires a greenhouse or a dry frame; loam, peat, and sand; careful watering in winter; propagated by parting the roots, or by seed. (145)

STAPELIA RADIATA, *Sims* (starry Stapelia).—Asclepiadaceæ § Stapeliæ.—A succulent under-shrub, with crowded, thick, rather four-cornered dark-green jointed branches, furnished with large recurved teeth on the angles; the fetid flowers are produced in pairs from near the base of the branches on long stalks; they are nearly an inch and a half across, in five segments, with a raised ring in the centre, from which the segments stand out like twisted narrow rays; they are of a dirty brown colour, with a paler stripe down the centre of each, and a lighter circle in the centre. A native of the Cape of Good Hope. Introduced in 1795. Flowers during several months in summer and autumn. Known also as *Duvalia radiata* (Haworth). *Culture.*—Requires a greenhouse; loam, sand, and brick rubbish; little water in winter; propagated freely by cuttings. (146)

HAYLOCKIA PUSILLA, *Herbert* (dwarf Haylockia).—Amaryllidaceæ § Amaryllеæ.—A small bulbous plant, with long very narrow leaves, which are produced in the winter; the flower is stemless, funnel-shaped, more than two inches long, in six segments, spreading above, white stained with purple outside. A native of South America, near Maldonado. Introduced in 1829. Flowers in August and September. It is known also as *Sternbergia americana* (Hoffmansegg). *Culture.*—Requires a cold pit; sandy loam, and sufficient moisture to keep it growing through the winter; propagated by offsets or seeds. (147)

ZEPHYRANTHES MESOCHLOA, *Herbert* (green-centred Zephyranth).—Amaryllidaceæ § Amaryllеæ.—A bulbous plant, with narrow strap-shaped green leaves, and a stem a few inches high supporting a solitary flower drooping to one side; the flower is divided into six nearly equal segments, green and white, with red stains outside. A native of Buenos Ayres. Introduced in 1828. Flowers in July and August. *Culture.*—Nearly hardy; free sandy soil; plenty of water while growing, and perfect rest afterwards; propagated by offsets or seed when produced. (148)

MELODINUS MONOGYNUS, *Roxburgh* (one styled Melodinus).—Apocynaceæ § Carisseæ.—A half-scandent shrub, with a smooth green bark, ovate-oblong acuminate smooth leaves, and terminal bunches of twelve or more very fragrant flowers, which have a tube about an inch long, with five spreading segments, each about an inch long by half an inch wide, with a notch on one side near the base; the flowers are pure white, and are succeeded by edible fruit, in appearance like a small smooth deep-coloured orange. A native of Sylhet, in the East Indies. Introduced in 1816. Flowers from April to July. *Culture.*—Requires a stove; loam, sand, and leaf mould; a liberal supply of water while growing; propagated by cuttings in sand under a bell-glass, in a hot-bed. (149)

STAPELIA MACULOSA, *Jacquin* (spotted-flowered Stapelia).—Asclepiadaceæ § Stapeliæ.—A decumbent succulent dwarf under-shrub, with four-cornered articulated green branches, furnished with rather spreading teeth on the angles: the flowers, which are fetid, are produced in twos or threes from near the base of the branches, on stalks about three inches long; they are divided into five fringed cordate segments, with a raised ring in the centre; the ground colour is a pale dirty yellow, banded across with a pale reddish brown. A native of the Cape of Good Hope. Introduced in 1804. Flowers in October. It is known also as *Orbea maculosa* (Haworth). *Culture.*—Requires a greenhouse; loam, sand, and brick-rubbish; very little water in winter; propagates readily by cuttings. (150)

ZEPHYRANTHES SESSILIS, *var. striata* (striped-flowered sessile Zephyranth).—Amaryllidaceæ § Amarylleæ.—A bulbous plant, with long slender semi-cylindrical twisted green leaves, and a slight stem three or more inches high supporting one large flower, which is near two inches long, in six segments, expanding flat in bright sunshine; white streaked with red on the outside. A native of Mexico. Introduced in 1824. Flowers in July and August. *Culture.*—Nearly hardy; very sandy soil; must be taken up and kept in dry sand during winter; propagates readily by seeds or offsets. (151)

STAPELIA PICTA, *Donn*, (painted-flowered Stapelia).—Asclepiadaceæ § Stapeliæ.—A crowded growing succulent under-shrub, with four-cornered articulated green branches, with small teeth on the angles; the flowers, which are fetid, are produced from near the bottom of the joints, and are divided into five ovate pointed segments, with a raised ring in the centre; the whole flower is very rough and warty on the inside; of a pale dirty yellow, spotted and blotched with dirty reddish brown. A native of the Cape of Good Hope. Introduced in 1799. Flowers in September. Also known as *Orbea picta* (Haworth). *Culture.*—Requires a greenhouse; loam, sand, and brick rubbish; little water in winter; propagated by cuttings. (152)

GETHYLLIS SPIRALIS, *Ker* (spiral-leaved Gethyllis).—Amaryllidaceæ. § Amarylleæ.—A small bulbous plant, with smooth narrow twisted strap-shaped leaves, producing solitary flowers, which rise directly from the root without any stalk; the tube of the flower is about three inches long, white, surmounted by the limb, which is of six segments, spreading, white inside, and purplish outside. A native of the Cape of Good Hope. Introduced in 1780. Flowers in June. It is known also as *Pàpiria spiralis* (Thunberg). *Culture.*—Requires a warm greenhouse; very sandy loam; perfect drainage; and to be rested in a dry state in winter; propagated by offsets. (153)

ZEPHYRANTHES CANDIDA, *Sims* (white-flowered Zephyranth).—Amaryllidaceæ § Amarylleæ.—A dwarf bulbous plant, with fleshy semi-cylindrical rush-like leaves, and a slight stem from two to four inches high, supporting a large solitary flower about two inches long, in six broad segments, expanding flat in sunshine, of a pure white, varying occasionally to red on the outside. A native of the banks of the La Plata, near Buenos Ayres. Introduced in 1822. Flowers from July to September. It is known also as *Amaryllis candida* (Lindley). *Culture.*—Hardy; sandy soil; propagated by seeds or offsets. (154)

LINUM ARBOREUM, *Linnæus* (Tree Flax).—Linaceæ.—A handsome and much branching shrub, attaining a height of several feet, clothed with pale glaucous green wedge-shaped leaves, the shoots being terminated by branching bunches of blossoms, which are an inch and a half across, composed of five distinct petals of a broadly ovate shape, and a bright golden colour. A native of Greece and the Levant generally. Introduced in 1788. Flowers from March to the end of summer. *Culture.*—Requires a greenhouse; or the open air in summer; sandy loam, with a little rough peat, and good drainage; propagated by cuttings in slight heat. (155)

STAPELIA ELEGANS, *Masson* (elegant Stapelia).—Asclepiadaceæ § Stapeliæ.—A diffuse growing succulent under-shrub, with short thick roundish four-cornered articulated branches of a green colour, shaded with reddish brown, furnished with spreading teeth on the angles: the flowers are fetid, produced in bunches of three or more from near the base of the branches on long stalks; they are divided into five short triangular segments, with a raised ring in the centre, of a brown colour, with a lighter stripe down the middle of each segment, which are also downy and fringed with hairs. A native of the sandy desert Karros at the Cape of Good Hope. Introduced in 1795. Flowers in October. Known also as *Duvalia elegans* (Haworth). *Culture.*—Requires a greenhouse; loam, sand, and brick rubbish; very little water in winter; it should not be overpotted; propagated by cuttings. (156)

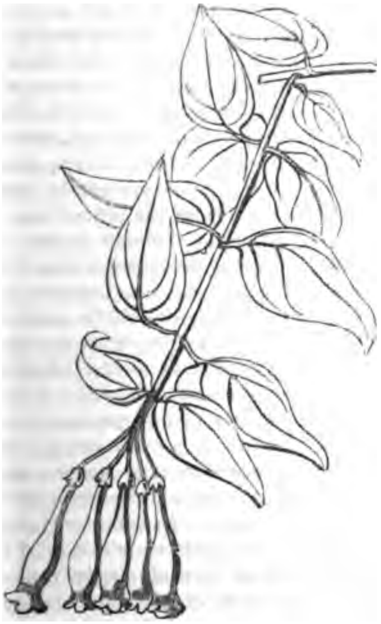
ZEPHYRANTHES SESSILIS *var. verecunda* (blushing sessile flowered Zephyranth).—Amaryllidaceæ § Amarylleæ.—A bulbous plant, with long slender semi-cylindrical twisted green leaves, and a slight stem three or more inches high, supporting one large flower, which is near two inches long, of six segments, the three inner ones longer than the others, expanding flat in bright sunshine, white, tinged with blush outside. A native of Mexico. Introduced in 1824. Flowers in July. Known also as *Zephyranthes verecunda* (Herbert). *Culture.*—Nearly hardy; very sandy soil; must be taken up and kept in dry sand during winter; propagated readily by seeds or offsets. (157)

LISIANTHUS SPLENDENS.

(Hooker.)

THE SPLENDID LISIANTHUS.

Young seedling plants of this species are growing in the rich botanical collection of the Royal Botanic Garden at Kew. No plants at present exist in the country, which have attained a blooming state. From the excellent dried specimens which have been sent to England by its discoverer Mr. Purdie, a description of the plant has been published by Sir W. Hooker, in his *London Journal of Botany;* and this description is accompanied by an excellent outline delineation of its appearance: to this source we are indebted for the materials from which the engraving, which accompanies the present notice, has been prepared.



Lisianthus splendens is a lovely and distinct species of an extensive genus. It has long climbing (or trailing) shining round stems and branches, furnished with opposite ovate-acute stalked leaves, which in their shape and texture have considerable resemblance to those of the great periwinkle of our gardens (*Vinca major*). The form of the flowers is somewhat singular; they are tubular, the base of the tube much contracted and quite slender, they are also contracted, though not so much so, at the throat or opposite extremity, the intermediate portion being inflated; the tubular part, taken in connexion with the small spreading segments at its mouth, have a good deal the appearance, as regards form, of a sweet-oil flask with its plaited stand; the limb or spreading segments alluded to is formed of five rounded crenulated lobes. The colour of these flowers is red; they are each about two inches long, and grow in terminal drooping umbels, often as many as eight growing together in a single bunch. They appear to be produced at the extremities of the short lateral branches produced by the main stems, and are, therefore, no doubt tolerably plentiful on healthy plants.

Seeds of this plant were obtained by Mr. Purdie, during his recent mission in search of plants for the Royal garden, and from these, sent by him to that establishment, young plants have now (1847) been raised. Mr. Purdie met with it, in 1846, growing on hills of red clay, near Canoas, in the province of Antioquia, New Grenada.

It belongs to the natural order Gentianaceæ, an order which furnishes our gardens with a considerable number of very ornamental plants.

But little experience has yet been acquired as to its habits and cultivation. It will no doubt form a vigorous growing plant, cultivable in a warm greenhouse, perhaps, requiring a slightly increased temperature during the early growing period of spring. The soil of its natural habitat would seem at once to indicate a loamy soil as being most proper for it; and doubtless a compost of three parts rough turfy loam, and one part turfy peat, mixed with sand enough to render the mass moderately permeable to moisture, would suit As to its duration, it is probably a perennial shrubby species, and as such, to be propagated with facility, by means of cuttings, planted in sand, and set in a situation where they may have a slight bottom heat and the usual conditions of shade and atmospheric moisture, congenial to their wants.

THE ROSE GARDEN.*

"The Rose Garden," now issuing in monthly parts, will in due time form a handsome volume; illustrated by coloured plates and wood cuts. It is intended to embrace two divisions; the first division is to comprise the history of the rose, formation of rosarium, soils, pruning, hybridizing, forcing, budding, grafting, &c.; and the second is devoted to an arrangement of all the approved roses known, in which the fullest descriptive particulars are introduced, more especially with reference to those points which should be—but seldom are—well studied as a guide in planting. From this latter division we will quote a passage which will illustrate the author's style. Speaking of the improvements manifest in the present garden varieties, as compared with wild forms, he observes: "When we look at the species with single or semi double flowers, which are the types of the present garden varieties, and compare them with those varieties, the contrast may well make us inquire—Have the latter really descended from these species? so greatly are they improved in form and texture of petal—increased also in size—changed from single to double—and varied in colour to a remarkable degree, that I do not wonder at persons unacquainted with the effects of cultivation on the wild species wishing to know the process of development before they accredit statements such as these. We may fairly presume, however, that such is their origin. But if so, how has such a change been wrought? we reply, simply by a long course of careful and systematic culture. What was the rose comparatively speaking, fifty, or even thirty years since? There are doubtless some admirers of the genus who can glance retrospectively to the former period, and trace the gradual alteration from flimsy semi-double varieties, few blooming in the autumn, to the full bold flowers of the present day, so exquisite in colour, so symmetrical in form. In order to trace their descent, it is necessary to revert to the species which we must suppose existing in a wild state. We know little of cultivation as pursued in remote ages, but may be justified in presuming that seeds of the rose were sown, as well as those of other trees and plants. It is recorded that the Romans did this, but we now allude to times anterior to these. Now, supposing the seeds of the wild species to have been gathered and sown, Nature's stores thus opened, she would yield forth her treasures, here as elsewhere, in rich abundance; the plants raised would produce flowers varying in colour, size, and degree of fulness. We may suppose the handsomest of these would be cherished most, and the probability is, that seeds would be saved from such; hence we might expect to obtain a variety as before, and a further advance in beauty. So on from time to time, the improvement taking place so gradually as to fix the attention only of the curious in such matters. Ages might thus roll away, and the species be not marvellously changed from their primitive form. But following the stream of time, we reach the period when the raising of plants became a settled occupation; soon men turned their attention to the improvement of races; then the sexes of plants were generally acknowledged; and finally, the effects of artificial fertilization were made known, and the art practised. The latter was indeed a grand stride in the path of improvement; by its pursuance man stepped in to the aid of Nature, and the results are strikingly visible."

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* The Rose Garden. By William Paul, of the Nurseries, Cheshunt, Herts. London: Sherwood & Co. Part I. May, 1847.

The description of the varieties—each group of which is discussed separately—is given on a very complete and excellent plan, embracing not only the commonly observed points of colour, size, form, &c., but also such points as habit and rate of growth, considerations of great importance in the judicious and satisfactory arrangement of a rose garden. The historical portion of the work will form very interesting reading.—M.

HUMEA ELEGANS.

The *Humea elegans* is a very graceful plant when well cultivated. Its habit is erect, with a few very subordinate side branches, and it reaches from five to eight feet in height. The stem is clothed thickly with large lance-shaped downy leaves, which, under good treatment, should be preserved nearly down to the base of the stem, as much of the beauty of the plant depends on its being furnished with perfect foliage; the foliage has an agreeable scent. The flowers are not individually conspicuous; they are small, and look not unlike brownish shining scales, but they are produced in a very large and most gracefully drooping plume-like panicle, from the top of the plant, and from the points of the side shoots. It is a biennial, belonging to the senecious division of composite plants (Compositæ-Senecionideæ). The seeds of the humea should be sown in the month of April or May, (they do not succeed well later,) in pots of light sandy soil, plunged in any pit or frame where there may be a gentle bottom heat; this is necessary on account of the seeds being oftentimes shy of germinating. After they have sprung up they are very liable to damp off if great care is not observed in watering. As soon as the plants are of sufficient strength to admit of it being done, they must be potted singly into small pots, using any sort of rich, light, vegetable earth or mould, with a good mixture of sand. They are then to be set in a pit or frame near to the glass, and if there be a gentle bottom heat so much the better. After a few days, abundance of air ought to be given them, otherwise they will be drawn up weak and spindly. As soon as they have filled the pots with roots, they must be re-potted in larger pots, using at this shifting much stronger soil in order to encourage the plants to grow sturdy during the summer months, so that they may rest awhile during the short dull days in winter. The kind of soil which suits the humea consists of equal parts of fresh fibry loam, and decomposed vegetable mould, with a sufficient quantity of sand to render the whole porous. They require at all times abundance of pot room and a liberal drainage of potsherds and small charcoal, which seems to suit them admirably well. Pots of eighteen inches in diameter are not too large for the full-grown plants. Plants thus treated the one season, generally commence flowering in June or July the following season, when they become a very graceful ornament in the greenhouse. They may also be planted out in any warm sheltered spot in the flower garden previous to their coming into flower, and will there produce a fine effect.

PANSIES AND THEIR FAULTS.

THE prevailing fault with the pansy is the small portion of ground-colour—yellow or white—as compared with the size of the flower, and the consequent breaking through of the eye into the deep margin. It may be very convenient for dealers to uphold varieties so faulty, but the judges ought to look sharply after a fault which spoils the brilliancy. A fine eye is a great point in a variety, if other portions of the flower are in perfection; but if there be not ground-colour enough to show it off to advantage, the eye had better be small than large, for it is a fatal blemish if the rays join the margin. It appears to us a strange fancy to select from a bed of seedlings varieties with striking faults, but the mischief arises out of the determination of certain dealers to send out some new ones every season, and they can do no more than take their best. There is no real blemish in a small centre, supposing the eye were small in proportion, and this shows at once the propriety of deciding that the mere quantity of ground-colour should form no part of the set properties; it were far better to determine that the eye should never break through to the margin, for it is the disproportion of the eye to the white or yellow surrounding it, that creates the defect, and causes the entire centre to be a confused, ill-defined, ungainly feature. If the grower would but attend to the details of the properties, instead of just two or three main features, which they think alone essential, they would show better taste. We know there are persons who hold themselves very high as individual authorities, who like round, thick, and smooth petals, but who fancy other points mentioned in the properties of no consequence. It betrays great ignorance of effect, and an abuse of order and taste; for if they would take the pains to place beside each other two moderately pretty flowers, one with the eye breaking through the margin, and one in which there is no such fault, they would see at once the importance of attending to those points which they considered of small consequence. If the eye is distinct, and there is a clear white or yellow beyond it all round, that is all that is required, for the size of the yellow or white centre is determined more by the eye than by the margin; that is to say, its size in proportion to the eye is more important than its size in proportion to the border or margin. It must be obvious that, where variety is required, any restriction as to the quantity of colour would be wrong. Upon the size and form of the yellow or white centre many of the variegations would naturally depend; therefore it is only necessary to make some condition which shall be easier defined, and infallible as a test; and this is done in the rule laid down, that the eye and its rays shall not break into the margin. The more this is attended to on the part of raisers the better, for it is a sad fault, and much too general among those we are obliged to admit in stands for want of better. There is another blemish, of which we have said so much that very few now venture to put forth a new flower that possesses it,—we mean the two colours on the ground, the two side petals a paler yellow than the bottom one, or, as in some flowers, the two side petals white ground and the bottom one yellow, or straw, or an undefined mixture of both. This is so serious a fault that it ought to banish them from every stand; or rather, it ought to disqualify a stand altogether, and put it out of competition. It is becoming rare among good fanciers, and will, we hope, soon be as unknown in competition as a foul-bottomed tulip or a run petal in a pink or carnation.

WARDIAN CASES FOR AQUATICS.

ONE of the most beautiful and curious adaptations of the principle of the Wardian case, is that of growing small aquatic plants in bell glasses, so contrived as to exclude the external air. In this way a very elegant ornament for the window-sill or drawing-room table may be produced. In an ordinary Wardian case, the upper parts of the plants only —the stems, leaves, and flowers—are presented to view, but the aquatic plants admit of a much more complete inspection; the growth and development of the roots is peculiarly interesting and instructive, and this is readily observed when the plants are growing in clear water contained in a clear glass vessel.

The mode of constructing these Wardian cases is both neat and simple; it is effected thus: — A piece of ornamental wood is "turned" into the shape of a very dwarf pedestal, of a saucer-like or shallow cup-like form, into which the knob of an inverted glass dome is adjusted, so that it stands secure. The glass is then filled with water, and some floating plants placed upon the surface;

pieces of thin copper or zinc, a quarter of an inch in breadth, are bent into the shape of the letter S, and hooked upon the edge of the inverted glass; then, a second glass just so much smaller than the first as to fit within its rim, is placed with its mouth downwards, its edge merely covered by the water; it is of course sustained in this position by the S shaped pieces of copper. In this way aquatic plants may be grown on the table of a living room, the leaves being protected from the dry air by the upper bell-glass, made air tight by its edge dipping into the water. The water, as often as necessary, is withdrawn by a few inches of small lead pipe bent into the form of a syphon. These globes might of course be made of large size, and ornamental, and the water might be withdrawn by the use of a small tap; while gold fish might be introduced into the glass amongst the roots of the plants.

Any of the small growing aquatic plants will be suitable for these glasses. To those who would find amusement in examining the development of botanical curiosities, the different species of Lemna might be recommended. Even the fresh water Algæ, such as confervas, might be introduced. These might be placed in glasses of small size. The following plants would require more space, but would also have more general interest:—*Aponageton distachyon*, white flowers; *Byblis liniflora*, blue; *Oxalis natans*, white; *Pistia Stratiotes*, white; *Pontedera crassipes*, blue; *Vallisneria spiralis*, small greenish; *Alisma natans*, white tinged with purple; *Hottonia palustris*, pale purplish; *Hydrocharis Morsus-ranæ*, white; *Utricularia vulgaris*.

The chief recommendations of this simple contrivance, are its small cost, and facility of application. Any person could contrive to manufacture one such as is here described, and the whole cost would be but a few shillings.

GROWING PINE APPLES WITHOUT POTS.

The plan of growing pine-apples without pots, which has recently attracted much notice, under the name of the Hamiltonian system, was described many years ago, in the *Gardeners' Magazine*, by Mr. Joseph Lang, kitchen gardener to the King of Bavaria. About the end of March he formed a pit, and the mould having reached a certain temperature, he placed such plants in it, from the pine stove, as already showed fruit, and were in vigorous growth. He then proceeds to say—"Holes being made in the mould, which consists of two parts of rich black soil, and one part of turfy loam, with a little sheep's dung, the plants are turned out of the pots, without the ball being disturbed, placed in the holes, and the soil made firm about them. When the row is planted (twenty-four plants contained under one sash, forming six rows in the width of the pit), I place on the top of the soil, round the roots, some cow-dung, several years old, and therefore thoroughly rotten, and not too wet. The coldness of our climate renders it necessary, when the heat of the manure subsides, or when there is a deficiency of solar heat, to light fires in the stoves, and to keep up a heat of from sixty-three to sixty-eight degrees, Fahr. In summer I allow the plants from 99 to 113 degrees, Fahr. of solar heat, and only, when the sun is too hot, a few hours' shade is given by fir branches, or reed mats placed on the sashes. In July, or the beginning of August, the plants are watered, when necessary, with cow's urine, diluted with one half water; and subsequently, I only sprinkle them with fine river water. When the day has been very hot, in the height of summer, the plants are rather freely sprinkled, in the evening, before the sashes are covered up, with river water; which producing a vapour during the night, is very beneficial to the fruit, and also gives the plant a clean look. When the plants have done bearing, which is in August or September, I let them stand without doing anything to them, except shortening the leaves of the main stem where the fruit has been growing, for the purpose of procuring more air and light for the new shoots or suckers. I have frequently taken from thirty to forty suckers from one old stock. About April the suckers are thinned, the finest being left standing; the others are put into pots, although never smaller than of the appearance of two or three years' growth. Then the ground is loosened (an operation which is rather difficult), and fresh cow or sheep's dung put round the plants. During the summer months they are watered and treated as before. If I find in autumn that the plants, after having done bearing, do not look so promising as might be wished, I transfer them carefully, with the ball, to a new bed, made like the former, except that it is advisable to put some sand round the plants; and here I treat them as before. During the winter a heat is kept up of from forty-six to fifty degrees, Fahr. There is no fear of their suffering, even though the coverings cannot be opened for several days; for the plants do not begin to grow till the month of February. The fruit-bearing plants may remain for three years in the same place; and I have seen them, in several instances, producing from three to six fruit every year of that period, of from one to two pounds weight each. I call this the wild mode of pine culture, because one sees on the same plant fruits large and small, ripe, half ripe, green, and in blossom."

CONTEMPORARY WRITINGS,

AND ORIGINAL NOTES, CONNECTED WITH HORTICULTURE AND NATURAL HISTORY.

THE SCALE INSECTS.—One of the most troublesome classes of pests to the gardener is that formed by the numerous species of the scale insect, which comprise the scientific family of Coccus. These take their common name from their appearance—that of a broad, flat, shield-like scale, which so securely shelters them from almost every attack, that when once established, they are with difficulty removed; and, even if they are dislodged, it is ten to one but some of their numerous progeny are left behind. One of the best means of clearing plants of these pests is to ply them with hot water. Water of the temperature of 140 degrees will annihilate the scale, young ones and eggs included, and will not do material injury to the plants. To the bark of leafless plants it will do no injury, nor will it affect stout and hard leaves; and if it becomes necessary to apply it in the case of plants having more tender foliage, though it may damage these, the injury to the plants will be far less than that which would result from the continued attacks of the insects. Thus by applying the remedy at proper periods the scale may be cleared off without at all damaging the plants. All deciduous plants should be cleared while they are leafless—they will not be injured then. Evergreens with thick leathery leaves may be operated on at any time, except when they are pushing their young and tender shoots, and under these circumstances they will not be injured. Those evergreen plants whose mature leaves are of delicate structure must be done during their resting season; in most cases the plant may be cut in, and perhaps little but the old bare stem left to cleanse—these will offer no obstruction; if this cannot be, as much care as possible should be used, and if a few leaves are damaged, why, they will soon be replaced by the younger growth. The water may in most cases be most readily applied by the syringe; sometimes it may be desirable to use a sponge. The principal condition of its application is, that it must *reach* every part to which the insect can have access.

GOOSEBERRY CATERPILLAR.—Various means are employed to destroy these destructive creatures. One very good plan is this:—About the end of March remove the surface soil about the trees for a diameter of a yard or so, that is, immediately under the bushes. This is to be taken out full two inches, or say three inches, and replaced by some fresh maiden soil; and then, when the leaves break out, a light covering of quicklime and soot is spread on the new soil in case there should be any stragglers. The old soil so removed should be taken away and burnt, and may then be used as a dressing elsewhere. The efficacy of this plan as regards the larvæ of the *Phalæna grossulariata*, or magpie moth, may be easily accounted for. The eggs are hatched in September, and the young larvæ take shelter during winter in the soil about the plants. By removing this before they become active, we are obviously removing the cause of the evil, and as they will not occur in fresh maiden soil, the trees, it may be expected, will be in a great measure free from attacks. So the chrysalids of the *Tenthredo grassulariæ*—or gooseberry saw-fly, which also devastates these trees—which are deposited in the soil in autumn, are likewise removed with the old soil, and thus their attacks are prevented. The remedy is a simple one compared with the injury inflicted by the insects when left unmolested; and those who have to protect their trees may choose between this plan and that of hand-picking as soon as the larvæ appear, or dusting and washing the trees with the various powders and lotions which are held to be efficacious.

WILD VEGETABLES.—Many kinds of wild plants afford acceptable vegetables in the early spring. Among these may be mentioned the young shoots of the nettle (*Urtica dioica*), which form an excellent spinach-like vegetable, and are exceedingly wholesome; the young top, when quite crisp and tender, is the part employed; they are boiled in the usual way. Another of these wild vegetables consists of the tops of the young shoots of the hop (*Humulus Lupulus*) before the leaves are expanded. These are dressed and eaten like asparagus, which they in some measure resemble. They are very wholesome and good. The succulent runners or under-ground stems of the marsh Woundwort (*Stachys palustris*) are used in the same way, and have somewhat the flavour of asparagus. In damp cultivated fields it often becomes a troublesome weed from the number of these suckers which it produces. The young leaves of the common cruciferous plant (*Alliaria officinalis*), which bears the trivial names of Jack by the Hedge or Sauce Alone, form, when boiled, an excellent substitute for spinach. They are said to be excellent when boiled with mutton, or with any kind of salt meat; in a fresh state they have rather an unpleasant garlic-like scent.

KOHL RABI.—The bulbs, or bulgy stems, of the kohl rabi form a useful vegetable, and are very hardy. The bulbs, when about three or four inches in diameter, are in a proper state for use. They are cut into quarters and well boiled, and have a flavour "between the artichoke and parsnip." The tops of the *green* variety form a very good substitute for brocoli in the spring, when the latter is all destroyed by the winter.

Mexican Pinuses.—The following results have been observed in the garden of the Horticultural Society at Chiswick, during the winter of 1846-7; in reference to the hardiness of some of the species of Pinus introduced from Mexico, chiefly by the agency of Mr. Hartweg:—*Pinus tenuifolia* under glass, where however the internal and external temperature only showed one degree of difference, has been to all appearance killed. Planted out on the lawn, on the south side of the large conservatory, the following species are apparently killed:—*P. apulcensis*, *P. filifolia*, *P. Russelliana, and P. Hartwegii*. The same effect was produced on *Juniperus flaccida*, and *J. tetragona*. This situation must, however, have been a very cold one, as the *Juniperus flaccida* has stood unhurt in another part of the garden; *Pinus Russelliana* is uninjured where it has been growing for some years; *P. apulcensis* has its leaves turned brown at the points; and *P. Hartwegii* under similar circumstances proves rather more tender. Under all circumstances, *Pinus filifolia*, and *P. pseudo-Strobus*, are killed. At Cork, the leaves of *Pinus patula* were slightly browned; and at the same place, *Cupressus thurifera* planted out about two years, is to all appearance dead.

Cooking Jerusalem Artichokes.—The following mode of cooking this vegetable, which has the general character of being watery and insipid, has been strongly recommended:—Boil the tubers so that the outside feels rather crisp when eaten; then it is not watery, but has a delicious flavour: if, however, it is boiled till it begins to break, it is watery and insipid. To cook them in this way, throw a handful of salt into the saucepan so as to make a strong brine: *when it boils* put in the artichokes, washed but not pared, and in eight or ten minutes they will be done. Then peel and serve up as may be preferred.

To propagate scarce Amaryllids.—The following plan may be adopted with success, when any scarce kinds are required to be propagated; and also in the case of such as do not readily produce offsets:—Cut off the bottom of the bulb, and lay it in the sun for an hour or two, in order to dry up the juices a little; then select a pot a little larger than the bulb, fill it half full of compost suitable for the particular species, and the other half with damp silver sand, into which the cut bulb is to be gently pressed: place the pot on a shady shelf in the stove or greenhouse, and give the bulb just water enough to prevent its shrinking. A single bulb will thus sometimes yield an increase of twenty. Other bulbs of the same structure—that is, tunicated bulbs, like the onion—may be propagated in the same way.

Germination of Seeds.—The germination or development of seeds, is said to be accelerated by steeping them in water, acidulated with oxalic acid in the proportion of sixteen drops to the pint, or one drop to the ounce by measure of water. This statement is made by Mr. Hamilton, in the *Gardeners' Magazine*. It is, however, recommended to wash off any adhering acid from the seeds so steeped. In the case of seeds having a hard bony covering, steeping in hot water greatly assists their germination, causing them to spring up very much earlier than otherwise they would do, and sometimes enables them to germinate when otherwise their feeble powers would prevent them from bursting their prison shell. The seed of many leguminous plants are among those which are greatly benefited by this practice. Soft coated seeds need nothing of the kind. The hard seeds to be operated on should be laid, each kind in a separate pan or vessel, and on the larger ones, boiling hot water enough to cover them is to be poured, and allowed to stand till it cools, and then the same process is to be repeated. Smaller seeds must not have the water quite boiling, and one application will suffice. The seeds are afterwards sown in the usual way.

Cropping Fruit Tree Borders.—There is a difference of opinion amongst gardeners as to the propriety of planting crops of culinary vegetables on the borders prepared for the roots of such of the choicer fruits as are planted against the garden walls. On the one hand it is contended, and probably rightly so, that this cropping is injurious to the trees—which, by the way, are reckoned to bring the *most* valuable of garden produce; at any rate, the digging of the border for such crops either disturbs the roots of the trees, or compels them to extend themselves at a greater distance from the surface, which is an admitted evil. On the other hand, it is mainly contended that the crops do not *much* affect the trees, and that the early produce which is raised in such situations, is too valuable to allow of a relinquishment of the plan. Again, on the other side, it is maintained that the constant cropping and manuring of the borders for culinary crops has the effect, in a short time, of rendering the former healthy maiden soil much grosser and richer, by which means instead of moderate growth well matured, rank growth is excited, and this growth is not properly matured, and is consequently unfruitful. To avoid all this, the following plan has been suggested:—Premising that the best means of inducing fruitfulness, is to check over-luxuriance, and that this is best effected by using a healthy compost from which stimulants are to a grea extent absent, it is recommended that fruit borders should be made in the first place the full width of fifteen feet, and that this fifteen feet should for the sake of elucidation be divided into three imaginary strips of five feet wide each, numbered 1, 2, and 3, beginning with that nearest the wall. Then No. 1, or that part where the trees are planted, must never be cropped, but kept occasionally forked up and pulverized; Nos. 2 and 3 are to be cropped at first; but in the course of a few years, when it is seen that the soil is becoming altered, and the trees are too much stimulated, the soil of No. 2 is to be entirely removed, down to the bottom of the border, and replaced by fresh maiden soil; No. 3 is to be trenched; and the opportunity embraced of cutting back any large coarse roots that may have formed. In a few years, when the symptoms return, remove the soil from the space No. 3 entirely as before; turn the soil of No. 2 over into No. 3, and fill up No. 2 again with fresh soil. Between the trees, spaces of No. 1, five feet or more in extent, may be taken out in the same way, and filled up again with fresh soil. In this way the advantages of root pruning are combined with securing the presence of healthy fresh soil for the roots to a very great extent; while the ordinary cropping of the border is but little interfered with.

FUCHSIA CORYMBIFLORA.—This species may be grown so as to form very handsome standard plants; and the following course of treatment is recommended for this end:—Sow the seeds at the end of February or beginning of March, and place them in a hot-bed. When the seedlings have grown two inches high, pot them singly into small three-inch pots, and plunge them in a gentle bottom heat. Repot them several times during their growth, so that they do not get pot-bound; and finally put them into eleven or twelve-inch pots, using a rough open compost of two parts fibrous peat soil, two parts coarse mellow loam, one part lumps of charcoal, one part silver sand; when finally potted, plunge them in a forcing pit to cause them to grow rapidly. All the lateral shoots must be removed until the desired height is attained; they must then be topped to induce them to form a head: when the lateral shoots resulting from the stopping are a few inches long, they must be topped, to produce other shoots, so as to form a profusely branched standard. After this they must be removed to a warm greenhouse, or stove conservatory, where they will bloom luxuriantly for a long time, and assume quite a pendulous habit. By this treatment, they become fine blooming plants by August, from seeds sown in February. They make fine standards the second year, if the branches forming the head are shortened back to an eye or two after the first year's growth, and the plants are provided with fresh compost, and grown in a warm greenhouse, without bottom heat.

SCARLET PELARGONIUMS FOR WINTER FLOWERING.—Some of the dwarf free flowering scarlet pelargoniums, such as the Huntsman, General Tom Thumb, &c., form objects of great beauty for ornamenting the greenhouse or conservatory during winter. Good plants for this purpose may be had by taking off cuttings in March or the beginning of April, or selecting at that time some of the best dwarf plants rooted in autumn, and kept through the winter in store pots. In either case, get them potted as soon as possible in three-inch pots, in rich loamy soil. When they are well rooted in these pots, shift them into eight-inch pots, in similar compost, well drained: then plunge the pots in an open place, either in the soil, or in beds of coal-ashes, which are preferable. During summer, give the pots an occasional turn to prevent the roots from getting fixed and strong outside the pots, and top the shoots to produce bushy plants; this latter must be done frequently at the early part of the season, but less frequently towards the end of summer; the bloom buds, however, are to be constantly removed if they appear, until about the end of August or beginning of September. In October, *before they are injured by frost*, they must be taken up, the pots washed and cleaned, and the plants then removed to the greenhouse or conservatory: they will then be more or less in bloom, and a supply of flowers will come on in rotation.

TROPÆOLUMS, MIXED.—Some account has recently been given of an accidental mixture of two kinds of tropæolum in one pot. This mixture consisted of *T. brachyceras*, and *T. tricolor*, which were growing and producing these blossoms intermingled. The writer adds:—"I could not help entertaining the idea, that if a combination of colours in the flower garden is so pleasing to the eye, there would be much wisdom in obtaining this pleasure from plants in pots. A fine specimen of a tropœolum, combining the rich colour of *Tropæolum tricolor*, with the yellow of *T. brachyceras*, and the soft cœlestial blue of *T. cœruleum*, would have a very pleasing effect." This hint is worth bearing in mind.

EPIGÆA REPENS.—This beautiful little plant, the May-flower of the Nova Scotians, is generally found to be difficult of cultivation. This arises, in most cases, from ignorance or forgetfulness of its habits. The secret of cultivating it successfully consists in keeping within the range of its roots a constant supply of water, for it is a swamp plant. Potted in rough peaty soil, and placed in a cool situation, where it can be kept constantly and moderately moistened, they will grow and flower profusely, with the shelter of a frame in winter. The flowers of this plant are white, tinted with rose—one variety bright pink—and deliciously scented; in shape they are like inverted pitchers.

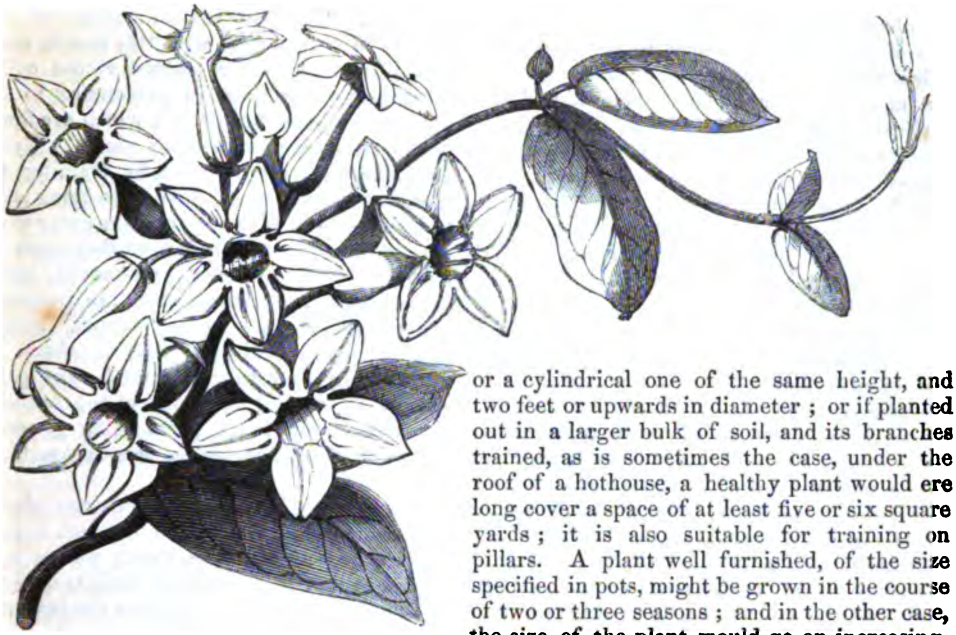
TURFING FRUIT TREE BORDERS.—This plan is recommended by some—where the cropping of the borders can be dispensed with—as a substitute for mulching, or at least as securing all the advantages of mulching, the turf in addition giving the borders a neat and agreeable appearance, and the roots of the grass keeping the soil in the state of porousness and texture which is suitable for the roots of the trees. The arguments by which this plan is chiefly recommended, are these:—"look at our hardy trees growing in meadows, and consider the fruitfulness of our orchards, where the roots are never disturbed at all." It has been suggested, instead of allowing the border to remain entirely open as a grass plat, to introduce low trees—of the finer kinds of pears for example—along the border, at a proper distance from the wall, in which situation they would derive benefit from the reflected heat and shelter of the wall. The dwarf standard pendulous trained pear trees would be very suitable for such situations, and would also have a very ornamental effect, if kept neatly trained. This plan is, of course, only practicable where the borders are not required to be cropped; and in that case, we consider it to be the best means of disposing of the surface of the borders, not only as regards appearance, but also the well-being of the trees. Besides, an advantageous situation is gained for the other trees.

LYCOPODIUMS.—The cultivation of lycopodiums is by no means difficult. The hardy kinds succeed perfectly when planted out in moist peaty soil. A piece of flat rock work, constructed in a damp situation, and so that the spaces for the plants may be made to resemble a morass, would no doubt be found to be more than any other situation adapted to these. The tender kinds grown in pots, succeed well in turfy peat soil, and are best set into pans or feeders of water. They however grow freely when suspended in baskets, and also suspended, with their roots merely enveloped with damp moss. In short, wherever moisture is abundant, and there exists a sufficiently elevated temperature to meet the wants of the several species, there need be no apprehension of their success. Some of the slender trailing kinds may be very aptly applied to cover the baskets, pots, and other contrivances in which Orchidaceous plants are suspended; and the more hardy of these trailing species form interesting objects, as edgings to vases, in which ornamental plants are set. *Lycopodium denticulatum*, a species of this habit is well suited for a greenhouse temperature; *L. cæsium* is perhaps the most handsome of any, from its blue-green hue; *L. stoloniferum* is stronger growing; and some of the smaller kinds, as *L. apodum*, *L. cordifolium*, *L. brasiliensis*, &c. are well suited for planting among orchids.—*M.*

RED SPIDER.—The red spider is often found very troublesome in frames. To destroy them, it is a good plan to wash the frames—round the front especially—with some clay mixed up with soapsuds to a paint, adding a handful of sulphur to a gallon of the mixture. A common painter's brush will apply it. If the frame smells very strongly during hot sunshine, air should be speedily given; for in extremes, it may possibly cause damage to the plants.

DWARF DAHLIAS.—What a pity it is that those who make it their business to raise new varieties of these favourite autumnal flowers, do not avail themselves of the most desirable properties of that kind known in gardens as *Dahlia glabrata*—the *D. Merkii* of Lehmann. Cross impregnation with this dwarf species could hardly fail to give rise to a class of varieties both dwarfer and smaller in their structure than those we now possess, and such varieties would be specially desirable in flower gardens, even if they were no boon to the florist. Probably the cross would tend to decrease the size of the blossoms a little, and if so, florists would not think it worth their while to encourage such a race. Under these circumstances, gardeners should attend to it for themselves. *D. glabrata* grows about two feet high, and is altogether of lighter and more elegant habit than the varieties of *D. variabilis*. A race of varieties embracing these characters would be very desirable.—*M.*

THE DAISY.—How few persons even know the variety which distinguishes this humble class of flowers. Their cheapness is somewhat against them, it is true; but if any gardener would take the trouble to get all the leading varieties, and plant them about in patches in the common borders, they would be found objects of much greater interest than many give them credit for. The flowers come out among the earliest of the spring, and the colours, which vary from pure white to very deep crimson, render a border, planted with daisies, in good proportion to the crocus, snowdrop, daffodil, primrose, and similar early flowers, much more effective than any body who has not seen it can imagine. The quilled white, quilled crimson, and double pink, are very distinct and beautiful varieties.



STEPHANOTIS FLORIBUNDA.

(Adolphe Brongniart.)

MANY-FLOWERED STEPHANOTIS.

Beautiful in the extreme, and possessing a most delicious fragrance, this fine climbing plant is admired by all who know it. Its beauty is derived from the contrast presented between the pearly whiteness of its large, profuse, and handsomely formed blossoms, and the deep green hue of its ample and enduring leaves; and this beauty, supported as it is by a most exquisite fragrance, gives it an indisputable claim to the high estimation in which it is held. One drawback alone is attached to its high recommendations—it is a tropical plant, and must be cultivated in a hothouse.

But there are hundreds of hothouses in this "land of flowers," and in every one of these the Stephanotis should find a place; and not only may it claim admission there,—it should also claim a participation of those privileges which are inseparable from perfection in the art of cultivation, and which in this country are certainly not "hid under a bushel," but are made manifest to all who will "read, mark, and learn" them. In no country has the art of cultivation been so far perfected as in this; in no other country do there exist such facilities for acquiring a knowledge of its principles and their application.

To come more closely to our subject. The general appearance of *Stephanotis floribunda* will be perceived from the accompanying sketch. It is a vigorous growing and permanent climbing plant, with evergreen foliage; adapted in its habit, when grown in a pot, to cover—say a flat trellis of two yards diameter, or a cylindrical one of the same height, and two feet or upwards in diameter; or if planted out in a larger bulk of soil, and its branches trained, as is sometimes the case, under the roof of a hothouse, a healthy plant would ere long cover a space of at least five or six square yards; it is also suitable for training on pillars. A plant well furnished, of the size specified in pots, might be grown in the course of two or three seasons; and in the other case, the size of the plant would go on increasing, as long as health and vigour were maintained. The leaves, it will be seen, are bluntly elliptical, opposite each other on the branches; they are rather large, thick or leathery, smooth, and shining, especially on the upper surface. The flowers grow in bunches, or umbels—that is, in bunches of six or eight, all issuing from the same point at the extremity of the peduncle or general stalk, which is attached to the branch at the sides, between the bases of the leaf-stalks; they are what are called hypocrateriform, or salver-shaped, that is, with a longish almost cylindrical tube, spread out at the extremity into five flat segments, which in this case are oval and somewhat oblique; the tube is upwards of an inch long, and the expanded segments form a spreading "limb" as it is termed, more than an inch in diameter; they are pure white.

It is a native of Madagascar, where some other species are also met with. It was raised in the Botanic Garden in the Isle of Bourbon, from Madagascar seeds, and thence brought to the Jardin du Roi, at Paris, where it first flowered in 1834. Probably it thence found its way to the garden establishments of this country about 1835.

There is nothing very peculiar in the cultivation it requires, for although to secure healthy specimens *good* management is essential, the particulars of treatment accord generally with those required by other plants. Being a permanent plant, and also one which attains a considerable size, it requires when kept in a pot, to be well potted, and will require to be transferred, as its size increases, to a larger pot, ultimately requiring a pot of considerable size. The permanent nature of the plant, and, in its maturer stages, the mass of soil in which it requires to be placed, requires the utmost care in the arrangement of the materials forming the compost, and the application of the usual forms of drainage. Besides a large potsherd formed of a piece of broken flower pot, which will be a little rounded, and should be laid the convex side downwards, a good layer of roundish pieces of potsherd, or of broken charcoal, should be laid in the bottom; this layer may occupy about one part in six of the depth of the pot, and on it should be placed another layer of about the same thickness of rough turfy soil, broken into lumps of greater or less size according to the size of the pot. Then the compost employed should consist of rough turfy soil—about equal parts of turfy loam and turfy heath soil being used, and lightened by the addition of silver sand; the soil should not be sifted but broken, so that the largest lumps may bear some proportion to the size of the pot employed; thus for a pot six inches deep, these lumps may be an inch in diameter, and for one two feet deep they may be as much as three inches, a fair proportion of the soil being broken up finer, and used along with these lumps. In potting, the old ball of earth and roots must be set so that the fresh soil, when the new pot is properly filled up—to within about an inch of the top if large—may just cover the old. If the plants are not kept in pots, but planted out for the purpose of covering pillars or trellis work in the hothouse, a compartment of at least two feet in diameter and the same in depth should be provided for the roots, and this is best formed of brickwork, so as to prevent the entrance of the roots of other more rapid growing plants, to the soil provided for the Stephanotis; if it is convenient, the size of these compartments may be increased as the plants gain size. The compost and its arrangement should be the same as in the case of the pots; only here, in proportion to the difficulty of applying a remedy, the necessity of making due provision for the drainage of superfluous water is, if possible, more peremptory.

The growing temperature and atmosphere of a plant stove suits this plant during its period of active growth; and when at rest in winter, the coolness which should ever mark the artificial temperature of a plant house at that period, will be properly conducive to its repose; then again, in the height of summer, when the plant has arrived at a flowering state, a warm greenhouse will be suitable for the preservation of its blossoms. In short, as regards atmosphere and temperature, it may be treated exactly as other stove plants of a woody character.

The training of the branches requires some attention. The branches are permanent, and require to be managed with this fact in view. Pot plants are better trained round cylindrical-shaped trellises, in preference to flat ones, which some prefer, but which are found not to range well with other plants. Cylindrical trellises are covered by training the branches spirally round them, care being taken to lead a supply of young shoots to cover every part in due proportion. Where they grow too thick, the weakest must be removed, and if more shoots are wanted than are produced, the young ones are to be "topped" as they progress, to cause them to produce others. It is generally necessary to attend most particularly to training a supply of the branches downwards, the lower parts being generally the worst furnished, unless this is constantly attended to.

Propagation is effected by cuttings planted in sand, placed in a gentle hot-bed, covered with a bell glass. The young plants when rooted require to be very carefully transferred to small separate pots, and are the better for being grown on for a period with the assistance of bottom heat. They ought also to be grown in rather lighter compost than the older plants.

BOTANICAL TERMS,

CHIEFLY APPLIED TO THE FLOWER.

Acicula; a term applied to the peduncle or rachis, when it is very slender, resembling a bristle, as in some of the single flowered spikelets of grasses.

Adelphia; a term applied to a group of filaments when connected at the base into a bundle, called a brotherhood: some of the Linnæan classes are founded on this peculiarity; thus—Diadelphia means two such groups, or brotherhoods; Monadelphia, one group, &c.

Adglutinated; applied to filaments and anthers when glued or united to other parts of the flower.

Adnate (*adnatus*); when the anther is attached to the filaments by its back.

Æstivation; the manner in which the different parts of the flower are folded before opening; analogous to vernation in leaves.

Alæ; the wings, or lateral segments of a papilionaceous (butterfly-shaped) flower.

Alabastrus; a term applied to the flower when in the state of a bud.

Amentum; a catkin, that is, when the flowers are arranged in spikes, but are destitute of calyx and corolla, whose place is taken by bracts, and when the whole inflorescence falls off in a single piece, either after flowering or when the seed is ripe.

Amphanthium; a term formerly applied to the *receptacle*, when it is not fleshy nor enclosed in an involucre; now called *hypanthodium.*

Andræceum; the male apparatus of the flower.

Androgynous; producing male and female flowers on the same plant, spike, or head.

Androphorum; applied to the tube formed by the filaments of the stamens, in a monadelphous arrangement.

Annulus; the part of the veil or *velum* in fungi which remains attached to the *stipes.*

Anther; a case, or small bag, attached to the filament, and furnished with cells containing a fine powder, which is the pollen or fructifying dust of the flower.

Antheriferous; anther-bearing.

Anthesis; the period when a flower opens is so termed.

Anthodium; the flower head of composite plants; in this case the head is flat, and surrounded by an involucre.

Anthophorum; when the receptacle is elongated, and bears the petals and stamens on its summit, it is so called, as in caryophyllaceous plants.

Apetalous; applied to flowers that have no corolla, the flowers of the oak, the elm, the birch, &c., are of this class.

Apothecium; the reproductive mass of a lichen.

Arista; an awn; it occurs mostly in grasses, and consists of the midrib of the little bracts, of which these flowers are formed, elongated into a bristle.

Aristate; awned, furnished with awns.

Aulæum; a term formerly applied to signify the *corolla.*

Awn (*arista*); the midrib of a bract, elongated into a bristle; it occurs in grasses.

Axillary; arising from the axils of the leaves, or the point where the base of the upper side of a leaf joins the stem.

Bale; a term applied to the *inner glumes* of grasses.

Basigynium; synonyme of *gynophore.*

Beard; the *awn* or *arista* of grasses.

Bi; an affix, derived from *bis,* twice, and signifying two; thus, bilabiate means two-lipped.

Biceps; two-headed, when flowers are collected into two roundish groups.

Bicornis; two-horned, when any part of a flower is furnished with two horn-like processes or appendages.

Bifarious; two-rowed, when flowers are arranged in two opposite rows; same as distichous: this is seen in an ear of common barley.

Biglumis; having two husks, or chaffy scales; this occurs chiefly in grasses.

Bouton; a French synonyme of *alabastrus.*

Bracts; small leaves formed between the true leaves and the calyx; or the leaves from whose axils flowers proceed, as in the common field veronica, as so called: bracts are usually situated on the peduncle or flower-stalk, but sometimes on the calyx, as in *Mussænda,* and at other times on the fruit, as in the medlar.

Bractlets; a term applied to very small bracts.

Caducous (*caducus*); falling off very early, as in the calyx of the poppy.

Cætonium; a term applied by some to the *glumes* of grasses.

Calathium; same as *anthodium.*

Calathidium; same as *anthodium.*

Calcar; a spur, when a petal is lengthened at the base into a hollow tube, as seen in the common orchis.

Calycine; of or belonging to the calyx.

Calyculate; having bracteas resembling an external calyx, as found at the base of the involucre of some composite plants.

Calyculus; an exterior rank of bracts, often found at the base of the involucre of composite plants.

Calyx; the outer envelope of the flower, usually green, sometimes coloured.

Calyptra; a veil; a fine membranous integument, in the shape of a hollow cone or extinguisher, which masks the urn-shaped seed-vessel of mosses.

Calyptrate; like operculate, but bursting on one side.

Campanulate (*campanulatus*); bell-shaped, that is, with an inflated tube, gradually widening to the limb, but not conical at the base.

Capillamentum; a name applied to the *filament.*

Capitulum; an arrangement of stalkless flowers on a depressed axis, that is, a head of flowers seated on the receptacle: if this is flat and surrounded by an involucre, it becomes an *anthodium,* or the flower head of composite plants.

Carina; the same as keel, applied to the lower segment of a papilionaceous flower.

Cassideous; where one petal is large and helmet-shaped, or hooded, as in the flowers of the *Aconitum.*

Catkin; an arrangement of flowers like a spike, but where scaly bracts take the place of calyx and corolla; they are seen in the birch, and a very beautiful hardy evergreen shrub called *Garrya elliptica* also affords a good illustration.

Catulus; a term formerly applied to the *catkin.*

Caudicula; an elastic cellular appendage to the flowers of some orchids, to which the granules of pollen are attached.

Cephalanthium; synonyme of *anthodium.*

Chaton; a French term for *catkin.*

Claw; the narrow base of a petal; it is very obvious on removing a petal of any kind of *Dianthus*.

Clinanthium; a kind of receptacle, not fleshy, but surrounded by an involucre, as in composite plants.

Clinandrium; the part of the column of orchidaceous plants in which the anther lies.

Columna; a term used to express the combination of the filaments into a solid body, which takes place in some plants, as in *Stapelia*, *Rafflesia*, &c.

Coma; bracts without flowers terminating the inflorescence, as in the clary (*Salvia Horminum*).

Coniothecæ; a term applied to the lobes or *cells* of the anther.

Connective; a membrane uniting the parallel lobes of the anther.

Corolla; the inner envelope — mostly coloured—of the flower, covering the stamen; the part which is commonly regarded as *the* flower.

Corollula; a term applied to the corolla when it is very small, or forms part of an anthodium.

Corona; an appendage from the base of the limb, in some flowers, forming a hollow cup, as in the *Narcissus*.

Cortina; a portion of the veil or *velum* of fungi adhering to the margin of the *pileus* or cap, the *annulus* being the part which remains like a loose collar around the *stipes*.

Corymb; an arrangement of flowers where the lowest are on pedicels long enough to elevate them to the same level as the upper flowers, the pedicels of which are short: the common yarrow flowers in a corymb.

Cruciate; formed of two opposite pairs of petals, arranged like a cross, as in the flower of the cabbage, or in a single wallflower.

Cupula; bracts, cohering by their bases into a kind of cup; the cup of the acorn is a cupula.

Cyathiform (*cyathiformis*); cup-shaped, the same as pitcher-shaped, except in not being contracted at the margin.

Cyme; a deliquescent panicle, short and corymbose in its arrangement, and indicating centrifugal expansion; the flowers of the elder tree are arranged in a cyme.

Decandrous; having ten stamens; this peculiarity distinguishes the tenth Linnæan class Decandria.

Declinate; bending to one side, as in the filaments of *Amaryllis*.

Dehiscent; opening by pores: applied to anthers.

Diandrous; having two stamens: this peculiarity distinguishes the second Linnæan class Diandria.

Diadelphous; when the stamens are collected into two bundles: this peculiarity distinguishes the seventeenth Linnæan class Diadelphia.

Didynamous; when two of four stamens are shorter than the other two: this peculiarity distinguishes the fourteenth Linnæan class Didynamia.

Digitaliform; foxglove shaped; like campanulate, but longer and irregular, that is, expanded more in one part than in others.

Digynous; having two styles, or stigmas.

Diœcious; when the male and female flowers are on different plants, as in the common bryony; this peculiarity distinguishes the twenty-second Linnæan class Diœcia.

Disk; a term applied to certain bodies or projections situated between the base of the stamens and the base of the ovary; they usually take the form of a fleshy ring, either entire or lobed, but sometimes they resemble a cup, or a fleshy cone.

Dodecandrous; having from twelve to nineteen stamens; this peculiarity distinguishes the eleventh Linnæan class Dodecandria.

Elytriculi; a name applied to the *florets* of composite flowers.

Endothecium; the membrane forming the lining of the anther.

Enneandrous; having nine stamens; this peculiarity distinguishes the ninth Linnæan class Enneandria.

Epigynous (*epigynus*); applied to the stamens when apparently inserted into or upon the summit of the ovarium; not an accurate term, as the stamens are always produced from the space between the base of the petals and the ovary, though they sometimes cohere with, and *appear* to proceed from, the adjoining parts.

Exothecium; the membrane forming the coating of the anther.

Exserted; applied when the filaments bearing the stamens are longer than the corolla.

Extrorse (*extrorsus*); turned outwards, or away from the axis to which it appertains; in anthers when the line of dehiscence is towards the petals.

Fascicle (*fasciculus*); a corymb, the expansion of which commences at the centre, as in some kinds of Dianthus.

Faux, fauces; the gaping part or throat of monopetalous flowers.

Filament; the stalk that supports the anther.

Florets; the small flowers of an anthodium; the individual parts—really flowers—which compose the so-called flower of composite plants.

Fornix; small scale-like lamellæ, overarching the orifice of the tube in some flowers as in *Cynoglossum*.

Fovilla; the matter contained in the granules of which pollen consists.

Galea; a helmet; the upper arched lip of some labiate flowers.

Gamopetalous; the same as *monopetalous.*

Gamosepalous; when the sepals are joined at the edge.

Gills; the lamellæ or thin parallel plates, which form the *hymenium* of mushrooms and similar fungi.

Glomerulus or *glomus;* a head or *capitulum.*

Glumes (*gluma*); the outer covering or scales enclosing the spikelets of grasses.

Glumella, glumellula; terms applied to the *hypogynous scales* of grasses.

Granules; the little grains of which the pollen consists; also the longer sporules of algæ.

Grappe; a term applied to the *raceme.*

Grossification; the swelling of the ovary after fertilisation.

Gymnostemium; a term used to express the combination of the filaments into a solid body, as it takes place in the flowers of orchids.

Gynæceum; a term applied to the *pistil.*

Gynandrous; having the stamens and styles combined, as in orchids; this peculiarity distinguishes the twentieth Linnæan class Gynandria.

Gynous; flowers are 1, 2, 3, 4, 5, &c. -gynous, when they contain so many styles.

Helmet; the upper arched part of a labiate flower; this is seen in the flowers of *Lamium.*

Heptandrous; having seven stamens; this peculiarity distinguishes the seventh Linnæan class Heptandria.

Hermaphrodite; when the male and female organs are in the same flower it is said to be hermaphrodite; it is so in the majority of plants.

Hexandrous; having six stamens; this peculiarity distinguishes the sixth Linnæan class Hexandria.

Hymenium; the part in which the sporules of fungi are situated.

Hypocrateriform (*hypocrateriformis*); salver-shaped, a monopetalous corolla, with a long narrow tube, and flat spreading margin or limb, as in the *Phlox.*

Hypogynous (*hypogynus*); applied to the stamens when apparently inserted under the pistils or ovary: not a very accurate term.

Hypanthodium; a fleshy receptacle not enclosed in an involucrum; the fig is of this structure.

Icosandrous; having from twelve to twenty stamens; this peculiarity distinguishes the twelfth Linnæan class Icosandria.

Included; applied to stamens when their filaments are shorter than the corolla.

Indehiscent; not opening by pores; applied to anthers.

Inflorescence; the general arrangement of the flowers on the branch and stem.

Infundibuliform (*infundibuliformis*); funnel-shaped; a monopetalous funnel-shaped corolla, with a swollen obconical tube and spreading limb, as the flower of *Nicotiana.*

Inlus; a term applied to the *catkin.*

Innate; when the anther is attached to the filament by its base; adhering to the apex of a thing.

Introrse (*introrsus*); turned inwards, or towards the axis to which it appertains; in anthers, when the line of dehiscence is towards the pistil.

Involucre; an organ consisting of a series of whorled bracts surrounding several flowers, as in composite and umbelliferous plants.

Involucellum; a partial involucre surrounding the smaller umbels of a general or compound umbel.

Keel; the carina or lower segment of a papilionaceous flower.

Labellum; the lower petal or lip in orchidaceous or other flowers; the front segment; the term is applied chiefly to the flowers of orchidaceous plants.

Labiate (*labiatus*); lipped, when the segments of a monopetalous corolla form two unequal divisions, as in the flower of the *Salvia.*

Labiose; when a polypetalous flower resembles what is called *labiate* among monopetalous ones.

Lacinula; the inflexed acuminated point of the petal in the flowers of umbelliferous plants.

Lamella; foliaceous appendages to the base of the limb of some flowers, divided into several erect scales; the *gills* of mushrooms.

Lepicena; a term applied by some to the *glumes* of grasses.

Lepisma; a term sometimes applied to the *disk,* when it assumes the appearance of a cup, as in pæonies.

Liliaceous; applied to a polypetalous corolla with claws gradually widening to a limb, as in the lily.

Limb (*limbus*); the dilated part of a petal or flower, as distinguished from the claw of the former in polypetalous, and the tube of the latter, in monopetalous corollas.

Loculi; a term applied to the lobes or *cells* of the anther.

Locusta; the spikelets or small bunches of the flowers of grasses.

Lodicula; a term applied to the *hypogynous scales* of grasses.

Membranula; sometimes applied to the *indusium* of ferns.

Monandrous; having one stamen; this peculiarity distinguishes the first Linnæan class Monandria.

Monadelphous; when the stamens are united into one bundle only, as in the mallow; this peculiarity distinguishes the sixteenth Linnæan class Monadelphia.

Monœcious; when the male and female flowers are separate, but on the same plant, as in the hazel, and the cucumber; this peculiarity distinguishes the twenty-first Linnæan class Monœcia.

Monogynous; having one style or stigma.

Monopetalous; when the petals cohere by their margins so as to form a tube, as in gentians, phloxes, primroses, &c.

Nectarotheca; a term applied to the hollow spur at the base of the petals of some flowers.

Nectarostigma; a term applied to such shining secreting spaces as are found at the base of the petals of *Ranunculus.*

Nucamentum; an old term for the *catkin.*

Octandrous; having eight stamens: this peculiarity distinguishes the eighth Linnæan class Octandria.

Operculate; applied to the calyx when it coheres in the form of a cap or lid, and is pushed off by the growth of the interior part of the flower, without any lateral rupture, as in *Encalypta.*

Orbiculus; a thick solid appendage to some flowers, covering the ovarium, as in *Stapelia.* It is also applied to the round flat cavity (hymenium) which contains the spores or seeds of some fungi, as in *Nidularia.*

Ovary (ovarium); a hollow case at the base of the pistil, enclosing the ovules; this part ultimately becomes the fruit; it is called *inferior* when situated below the calyx, as in the apples; and *superior* when situated above or within the calyx, as in primrose.

Pailletti; a term applied to the membranous bracts (*paleæ*) stationed between the florets in composite flowers.

Palate; the lower surface of the throat of personate flowers; it is elevated in two ridges, and divided by a depression resembling the sinus of the lip; this may be seen in *Antirrhinum.*

Paleæ; the membranous bracts found between the florets in composite flowers; the term is also applied to the bracts or parts which take the place of a corolla in grasses.

Paleolæ; a term applied to the *hypogynous scales* of grasses.

Panicle; this is applied where the axis bears branches of flowers (the raceme being separate flowers produced from the axis): this form is a simple panicle; a deliquescent panicle is when the axis is broken up into different branches.

Pappus; the calyx of composite plants; it is usually hairy, sometimes feathery, or bristly, or chaffy.

Papilionaceous; butterfly-shaped, a fanciful term applied to flowers shaped like those of the sweet pea or lupin.

Pedicels; the ultimate ramifications of a branched flower stem, which bear the individual flowers.

Pediculus; a term applied to the *filament.*

Peduncle; the stalk which supports a solitary flower; it never bears leaves, but sometimes bracts.

Pentandrous; having five stamens; this peculiarity distinguishes the fifth Linnæan class Pentandria.

Pentagynous; having five styles.

Perianth; the calyx and corolla combined; applied in cases where these cannot be easily distinguished, as, for instance, in the tulip, lily, &c.

Perigonium; a term applied to the *paleæ* in grasses and allied plants.

Perigynium; two confluent bracts enclosing the pistil, as in the flowers of *Carex.*

Perigynous; applied to stamens when *apparently* inserted into the calyx or some part surrounding the ovary, but where they *really* cohere with these parts for a certain length: not an accurate term.

Perisporum; a term applied to certain filiform appendages of the flowers of cyperaceous plants, analogous to the hypogynous scales in grasses.

Peristachyum; a term applied by some to the *glumes* of grasses.

Personate; labiate, with the palate of the lower lip pressed against the upper lip.

Petal; one of the parts or divisions of a corolla; a geranium has five petals, a single wall-flower four, and so on. Double flowers are formed from a multiplication of petals beyond the ordinary number.

Phyllum; a term proposed instead of *sepal* for the divisions of the calyx.

Pistil; the female organ of the flower, the central part of an hermaphrodite flower: it usually consists of three parts; the ovary or young seed vessel, the style, and the stigma, or active part.

Ploranthium; a term applied to the *receptacle* of composite plants.

Poculiform (poculiformis); nearly the same as campanulate; cup-shaped, with a hemispherical base, and upright limb.

Poinçon; a French term for *spadix.*

Pollen; the powdery substance, or fertilising dust contained in the cells of the anther.

Polyadelphous; when the stamens are collected or joined at the base into many bundles: this peculiarity distinguishes the eighteenth Linnæan class Polyadelphia.

Polyandrous; having many stamens, an indefinite number (above 20): this peculiarity distinguishes the thirteenth Linnæan class Polyandria.

Polypetalous; where the divisions or petals of the flowers are all distinct; it is a term of distinction from monopetalous, in which the petals are united together into a tube. The ranunculus is a polypetalous flower.

Raceme; an arrangement of flowers along a common axis, where each stands on a little pedicel, or foot-stalk, as in the hyacinth.

Rachis; the axis of inflorescence; the peduncle is so called when it proceeds nearly in a direct line from the base to the apex of the inflorescence: *rachis* is sometimes applied also to the petiole and midrib of the frond of a fern.

Radii; the pedicels which support partial umbels.

Receptacle; a flattened area on which the flowers of some plants are arranged; when it is not fleshy, but surrounded by an involucre, it is called *clinanthium,* as in composite flowers; if fleshy, but not enclosed, it is termed *hypanthodium,* as in the fig, and also in *Dorstenia,* a genus of curious stove plants.

Ringent; gaping; when a labiate flower has a wide orifice, it is said to be gaping or ringent; this is seen in *Lamium.*

Rotate; wheel-shaped; a monopetalous corolla, in which the tube is very short, and the limb spreading, as in *Veronica.*

Sarcoma; a term applied to the *disk.*

Scape; a peduncle, destitute of leaves, rising from the ground, and supporting several flowers at its apex, as in the cowslip.

Scyphus; a term applied to the appendage called *corona,* when it assumes the form of an undivided cup, as in the flowers of narcissus.

Sepals; the divisions of the calyx, as distinguished from petals, which are the divisions of the corolla.

Sertulum; a term applied by Richard to what is better known as a *simple umbel.*

Seta; the awns attached to the flowers of grasses are so called when they are continuous with the apex of the glumes: the term is also applied to the hair-like stalks which support the capsule of mosses.

Spadix; a cluster of flowers closely arranged round a fleshy axis, enclosed in a spathe, as in palms.

Spathe; a large coloured bract, enclosing the spadix or inflorescence in palms and araceous plants.

Spathella; a term applied to the *bracts* or *valves* of which the flowers of grasses consist.

Spermatocystidium; a term applied to the *anther.*

Spicula; a term applied to the *locusta,* or *spikelet* of grasses.

Spike; an arrangement of sessile or stalkless flowers along a common axis, as in the plantain.

Spikelet; applied to the inflorescence of grasses: it is a spike in which the flowers are destitute of calyx and corolla, their places being supplied by bracts, which are again supported by other bracts; the rachis of a spikelet is flexuose and toothed, and does not fall off with the flowers.

Sporidia; the coverings of the sporules or reproductive germs, in cellular plants.

Spur; the base of a petal lengthened into a hollow tube, as in the flowers of *Orchis.*

Squama; a term applied to the *scales* or *bracts* of the catkin.

Squamelles; a term applied to the *membranous bracts* which occur in composite flowers.

Squamulæ; the *hypogynous scales* in the flowers of grasses.

Stragulum; a term applied to the inner *glumes* or *paleæ* of grasses.

Stamens; the male organs of a flower; generally situated on slender threads called filaments, but these are sometimes absent, and the stamen is then said to be sessile or stalkless: the anther and the pollen are essential parts of a stamen.

Standard; the upper or erect petal of a papilionaceous or butterfly-shaped flower; it is usually more expanded than the rest. The sweet-pea has a papilionaceous flower.

Stenopetalous; narrow petaled; applied when petals are narrow in proportion to their length.

Stigma; the upper extremity or secreting surface of the pistil, supported (usually) by the style, and having a humid or papillose surface: it is the most important part of the female organs of the flower, being that by means of which fertilization is conveyed to the ovules.

Stigmatose; this term is applied to the style when the stigma is long and lateral, or attached to its side.

Style; the part that supports the stigma; it is analogous to the filament of a stamen: sometimes it is absent, and then the stigma is said to be sessile.

Stylotegium, saccus; synomynes of *corona.*

Syngenesious; a term applied to the plants of the nineteenth Linnæan class Syngenesia, which are the same as those called composite plants, as the daisy, dandelion, groundsel, thistle, &c.

Talaræ; a term applied to the *wings* of papilionaceous flowers.

Tegmen; a term applied to the outer *glumes* or *valves* of grasses.

Tetradynamous; when four out of six stamens are obviously longer than the other two: this peculiarity is the distinguishing feature of the fifteenth Linnæan class Tetradynamia.

Throat; the orifice of the tube in a monopetalous corolla.

Thyrse (thyrsus); applied to a panicle when the lower branches are shorter than those in the middle, and the whole are very compactly arranged, as in the lilac and privet.

Thyrsula; a term applied to the inflorescence of labiate plants, usually called a whorl, but which is more properly considered as two opposite verticillasters: the different kinds of mint afford illustrations.

Triadelphous; when the stamens are united into three bundles: this is the case in some of the species of *Hypericum.*

Triandrous; having three stamens: this peculiarity distinguishes the third Linnæan class Triandria.

Trigynous; having three styles or stigmas.

Tube; the lower part of a monopetalous corolla; the tube may be seen in the flowers of the *Phlox.*

Umbel; applied to a head of flowers when the pedicels all proceed from a single point: when each pedicel bears a single flower, the umbel is simple, but if divided and bearing other umbels, it is compound; in the latter case, the assemblage is called a *universal umbel,* and each separate umbellule, or little umbel, a *partial umbel;* the latter are supported by pedicels or little stalks called *radii.* In the garden-fennel the universal and partial umbels may be readily distinguished.

Unguis; the claw or narrow base of a petal; some petals, as those of the rose, have no claw.

Unguiculate (unguiculatus); having a claw; applied to distinguish such petals as are clawed from those which are not.

Urceolute (urceolatus); pitcher-shaped; differing from bell-shaped in having the orifice contracted: the flowers of many of the heaths are pitcher-shaped, so are those of the vacciniums, arbutuses, andromedas, &c.

Urceolus; same as *perigynum.*

Valves; the bracts which compose the flowers of grasses are so called; so are the parts into which the anther-cells of such plants as bear them separate, when they burst to discharge the pollen.

Velum; the veil or horizontal membrane which connects the margin of the pileus or cup with the stalk which bears it, when in an undeveloped state, as seen in the mushroom when young.

Versatile (versatilis); applied to anthers when loosely united to the filament by their centre, so that they swing lightly on a sort of pivot.

Verticillaster; applied to a head of flowers when arranged as a cyme, but consisting of a very few flowers.

Vexillum; the standard in papilionaceous flowers.

Wings; the lateral petals of a papilionaceous flower.

Whorl (verticillus); an arrangement of several flowers opposite each other, around the stem; the same term is applied to a similar arrangement in leaves.

CUT FLOWERS.

From Her Majesty to the humblest of her humble subjects, the love of flowers seems engrafted on our very nature, and young as well as old imbibe it rapidly. The infant will stretch forth its hand for a daisy or a buttercup, and children of every growth gather them with a delight scarcely describable. Of late years the taste has been indulged in to such an extent by all classes, that there is no fête of any importance can take place without flowers forming the principal decorations, nor is it usual for ladies of any standing to appear at the theatre or at balls without their nosegays. Her Majesty on her journeys has been again and again presented with flowers. Every gentleman who would pay a compliment to a lady will, if he be wise, present her with a nosegay. Every lady who would have it appear that she is not absolutely neglected must procure a bouquet; hopeless is that maiden considered who appears in public assemblies without a few blossoms of some kind. The time of year is no longer admitted as an excuse for the absence of nature's favourite gifts; for now flowers can be obtained at all seasons; and despite biting frosts, knee-deep snows, and north-east winds, abundance may be procured as easily (though not so cheaply) in winter months as in the palmy days of summer, and hence it becomes merely a question of expense. In this country and in Paris a few sprigs of bloom is as much as is required, and even for that any gentleman disposed to be liberal may sometimes spend a guinea. In some places the nosegays are too large to carry. Flowers, flowers, flowers are the gifts, the only really complimentary offerings that can be made, without the possibility of offending the highest lady in the land. Let us, however, admonish the sellers of cut flowers that there is yet room for improvement in the quality of those offered in general, and those who grow for the purpose of supplying them should recollect that common, ordinary flowers, are not suited to the present day. There are plenty of good things that can be grown, and they ought to be grown. For even those who are unacquainted with flowers begin to see the difference between good and bad subjects; and there is as much difference in their usefulness for a bouquet, as there is in tinsel and gold. Let us observe one property alone—the capacity for keeping. The geranium is in this particular exceedingly deficient, however much it may be tolerated for its beauty the short time it does last; but compare it with others of a more permanent character, and it becomes almost beneath notice. Wallflowers and stocks are soft flabby subjects, though in this case the perfume redeems them. Lupins of all kinds are short-lived, and have no scent to help them out. Sweet peas are generally used, but the smell of them, and not their appearance, makes them popular. In making up large bouquets, all things are used, very much to the disadvantage of the nosegay. The flowers to use in hand bouquets should be of a very superior description to those which are now made up. Some of the best flowers for cutting and lasting, and for beauty while they do last, or for their admirable perfume, or their brilliancy, or some very desirable property, are the Hoveas, Ericas, Daphnes; the thick petaled Azaleas, Gardenias, Camellia japonica, especially Sasanqua rosea (the smallest), Myrtifolia, Tricolor, and the smaller sized ones; some of the Chorozemas, and the Epacrises. The Laurustinus and Andromeda floribunda will help out; and for brilliance there is not a more beautiful subject than the Euphorbia jacquiniflora. Of the annuals there are but few that do well for small bouquets; of those that will, Collinsia bicolor and Nemophila insignis are the best. Convolvulus minor is very beautiful, but can rarely be kept open, so that it deteriorates after a short time. All the flowers of the orange, lemon, and citron tribe are splendid subjects. These are the kind of things to place in a lady's hand. The ordinary flowers at balls and theatres look miserably dull towards the end of the evening; but the sorts we have mentioned would keep for days were they returned to water on being carried home, and be better the third night than one of ordinary flowers would the last half of the first evening. But the bouquets of the markets and of half the fancy shops are patched up almost any how; odd blooms without stems, stale flowers, fastened with all manner of contrivances, and supported altogether with a rim of paper, make up what is called a bouquet; whereas if a lady would take the trouble to pull it to pieces, and see the sort of rubbish it comprises, it would set them against such common trash. Let us remind the purchasers of nosegays to have no rubbishing paper round them, but to order a few good flowers, tied simply together by their proper stems only, and that in a way not to conceal that they are real sprigs of what they profess to be, instead of a lot of things adjusted on the surface, and huddled together so that not two flowers can assume their proper shape, but all are alike squeezed, and jammed, and bound so that they cannot look well a whole evening. Flowers never look so well as when they assume their natural position. We know that this will force the vendors to have better flowers; and if a lady choose to untie her bouquet afterwards, and put the flowers in water, she may use them again and again; whereas a bunch of the ordinary stuff, with a clipped paper round it, would, if untied, be unfit for anything. Why, it was the fashion at one west-end house to fasten individual flowers on wires for stilts, so that in a very short period they fade for want of nourishment, even the nourishment of a stem. It is true that a few flowers, by these means, are made to go a great way, but they are of no value as flowers, nor are they of any use as a bouquet. According to our ideas, a bouquet ought to be composed of a number of sprigs of such plants as we have named in bloom, handsome in themselves separately, as well as in a bunch, and some taste should be displayed by the tying them together, so as to contrast the colours well; and the first person that puts out bouquets after this fashion will, we have no doubt, secure a good trade, for the difference will be seen in an instant, and duly appreciated by the purchasers of cut flowers. We mean, first, substituting good sprigs, with bloom on them, for mutilated rubbish that wants manufacturing; and we mean also, flowers of the description we have mentioned, instead of the common, soft, flabby subjects, which droop directly. Flowers have suffered a good deal of odium through the careless—we were going to say fraudulent—mode of making up nosegays; and if the imposition be not promptly stopped, ladies will go to the theatre and balls without any, rather than such as they have hitherto been put off with.

NOTES ON FLOWERS AND FLOWERING PLANTS.

Begonia Dregii, *Link, etc.* (Drege's Begonia, or Elephant's-ear).—Begoniaceæ.—A small perennial plant, with large flattened tuberous roots, and erect fleshy stems, a foot or more in height, rising several from the root, and branched; the leaves are alternate, oblique, elliptic-rhomboid, and angulated; the flowers are white, growing in pairs from the axils of the leaves, male and female together. A native of the Cape of Good Hope. Introduced in 1838. Flowers from July to September, or longer. *Culture.*—Requires starting in a stove or hot frame, and subsequent removal to a greenhouse; peat and loam; propagated by cuttings, in heat, or by dividing the plant.

Anemone vitifolia, *Buchanan* (Vine-leaved Wind-flower).—Ranunculaceæ § Anemoneæ.—A herbaceous perennial, with an erect branching stem, growing about two feet high, palmately-divided leaves, and white flowers, consisting of five concave petals. A native of Nepal. Introduced in 1829. Flowers from June to September. *Culture.*—Hardy; ordinary garden soil; propagated by division of the plant.

ACACIA CELASTRIFOLIA, *Bentham* (celastrus-leaved Acacia).—Fabaceæ § Mimoseæ-Acacieæ.—A handsome robust shrub, five or six feet, or more, in height, glabrous in every part. The phyllodia are alternate, oblong, elliptical, or subovate, acute, with a strong nerve running through the centre. The flowers grow in racemes, which are longer than the leaves, and spring from the base of each of the upper phyllodia, so that the blooms form a great leafy panicle; they are palish yellow, with an odour resembling that of whitethorn, but more delicate. A native of the Swan River colony. Introduced in 1845. Flowers in March. *Culture.*—Requires a greenhouse; loam and peat; propapated by seeds, or by cuttings planted in sand under bell glasses. (158)

GARDENIA MALLEIFERA, *Hooker* (clapper-bearing Gardenia).—Cinchonaceæ § Gardenidæ.—A noble shrub of from four to six feet high, often proliferously branched from the axils of the leaves, which are opposite or ternate, from five to nine inches long, obovate lance-shaped, and glabrous. The flowers are solitary and terminal, or on a very small branch between the upper pair of petioles; the tube of the flower is four inches long, slender, (about as thick as a goosequill), with a bell-shaped mouth, and five large spreading roundish ovate segments; they are white, or creamy white, becoming tawny in age; the flowers have a remarkable clapper-shaped stigma, extending beyond the mouth of the flower, and resting as it were on its lower side. A native of Sierra Leone. Introduced in 1843. Flowers in April. *Culture.*—Requires a hot, moist stove; peat and loam; propagated by cuttings. (159)

THIBAUDIA PULCHERRIMA, *Wallich* (beautiful Thibaudia).—Vacciniaceæ.—A lofty shrub, with long vigorous branches, and large, thick, alternate, broadly-lanceolate dark green leaves, crowded at the ends of the shoots, and falling as the branches are prolonged. The flowers grow in the older (not less than two years old) wood, one side of which they invest with crowded sessile umbels of drooping blossoms, these umbels growing from the axils of the fallen leaves; the expanded corolla is between cylindrical and bell-shaped, and five angled, with five reflexed segments; they are of a pale red, chequered with lines of deeper red. A native of Khasiya in the north of India. Introduced by Messrs. Lucombe, Pince, and Co. in 1845. Flowers throughout the spring and early summer months. *Culture.*—A noble object for a greenhouse conservatory; peat, loam, and sand; propagated by cuttings. (160)

IPOMŒA PULCHELLA, *Roth* (handsome Ipomœa).—Convolvulaceæ § Convolvuleæ.—A handsome climbing plant, with a herbaceous angular stem, here and there rough with small dots. The leaves are alternate, with long petioles, and consist of five elliptic-ovate acuminated leaflets; from their axils arise the petioles, which usually bear one flower, and are, as well as the leaf-stalks, spirally curled; the corolla is large, of a dark purple colour, with the tube strikingly inflated, so as to be bell-shaped as far as the throat. A native of Ceylon. Introduced in 1845. Flowers in November and December. Also called *Convolvulus heptaphyllus* (Roxburgh) and *C. bellus* (Sprengel). *Culture.*—Requires a stove; rich loamy soil; plenty of space for its branches; propagated by seeds or cuttings. (161)

VANDA CRISTATA, *Lindley* (crested Vanda).—Orchidaceæ § Vandeæ-Sarcanthidæ.—A handsome epiphyte, with short stems, clothed with broadly linear leaves, which are leathery, truncate, and irregularly three-toothed at the apex; from the axils proceeds an erect raceme, of five or six flowers, the sepals and petals yellowish green, the lip large, broadly oblong, the apex cut into three points or horns, deep yellow, and rich velvety on the upper surfaces, marked with blood-purple longitudinal streaks and dots. A native of Nepal, growing on trees. Introduced in 1840. Flowers in the latter end of winter, and throughout the spring *Culture.*—Requires a stove; does well in a basket, among turfy peat; propagated by division of the plant. (162)

RHODODENDRON ARBOBEUM, *var. Paxtoni* (Mr. Paxton's tree Rhododendron).—Ericaceæ § Rhododendreæ.—This is a magnificent variety of the *Rhod. arboreum.* It is a fine evergreen shrub, bearing at the ends of the shoots large clusters of flowers, deep crimson, slightly spotted in the throat, of large size, good form, and fleshy texture. A native of elevated situations on the Khoseea Hills of India. Introduced in 1840. Flowers in April and May. *Culture.*—Requires a greenhouse; turfy peat, propagated by layers, or grafting. (163)

COLLANIA DULCIS, *Herbert* (sweet Collania).—Amaryllidaceæ § Alströmerieæ.—A slender rigid plant, with erect tortuous stems, not prehensile, growing a foot or more in height. It is nearly related to the Bomareas and Alströmerias. The leaves are alternate, oblong, obtuse at the apex, and narrowed at the base; a few (1 to 4) cylindrical drooping flowers are produced from the top of the stems; they are formed of six segments, the three outer ones close fitting, and of a reddish purple colour, with green tips, the inner three protruding their deep green tips just beyond the outer ones; the whole flower is rather more than an inch long. A native of Huallay, near Pasco in Peru, at from 12,000 to 14,000 feet above the sea. Introduced in 1845. Flowers from August to October. *Culture.*—Requires a greenhouse; rather a shy grower; peat and loam; must be kept nearly dry in winter; propagated by seeds. (164)

MEGACLINIUM VELUTINUM, *Lindley* (velvety Megaclinium).—Orchidaceæ § Malaxeæ-Dendrobidæ.—A pseudo-bulbous epiphyte, with oblong lance-shaped leaves, and small flowers; the upper sepals and petals are yellow, and the rest of the flowers as well as the rachis deep purple; the lateral sepals are velvety inside. A native of Cape Coast Castle. Introduced in 1845. Flowers in April. *Culture.*—Requires a stove; turfy peat soil; propagated by division of the plant. (165)

VANDA VIOLACEA, *Lindley* (violet Vanda). Orchidaceæ § Vandeæ-Sarcanthidæ.—A handsome epiphyte with close leafy stems, throwing out large fleshy roots towards the base. The leaves are nearly equal in width, of moderate length, leathery, channelled, and accised; and the flowers grow in pendent many-flowered racemes, and have much the general appearance of Aerides, being white spotted with light violet, and having a violet coloured lip; they have also a faint and rather disagreeable smell. A native of Manilla. Introduced in 1838. Flowers in February. *Culture.*—Requires a moist stove; turfy peat; propagated by divisions of the plant. (166)

CLEISOSTOMA SPICATUM, *Lindley* (spike-flowered Cleisostoma).—Orchidaceæ § Vandeæ-Sarcanthidæ.—An epiphytal plant, with large broad foliage, and dense short, oblong, many-flowered spikes of yellow and red flowers. A native of the island of Borneo. Introduced in 1846 by Messrs. Rollisson. Flowers in April and May. *Culture.*—Requires a hot moist stove; turfy peat soil, or a block of wood; propagated by division of the plant. (167)

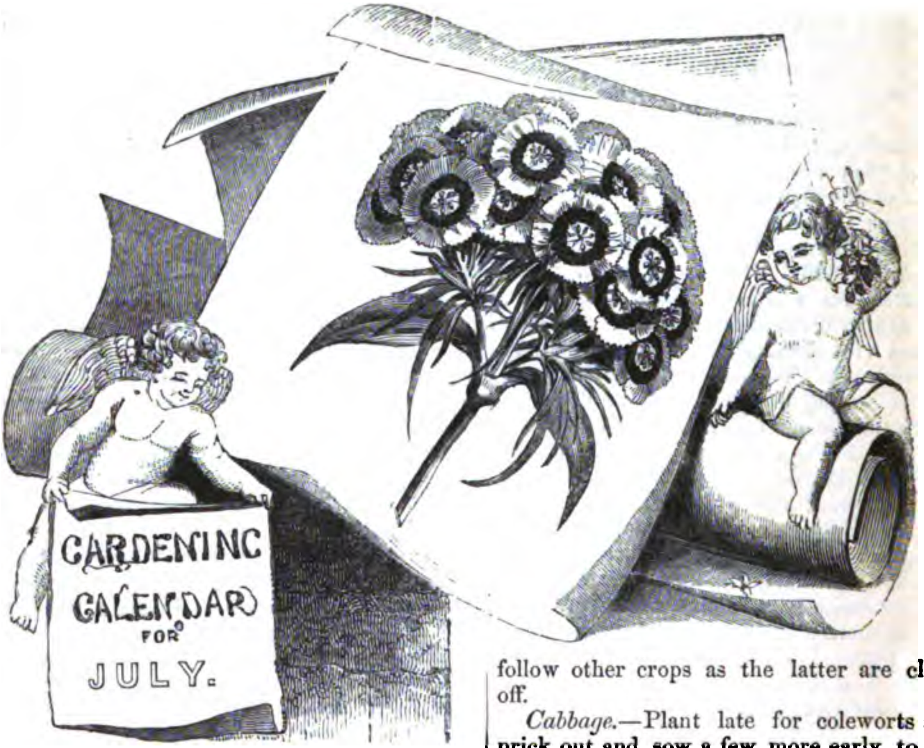
BERBERIS ILICIFOLIA, *Foster* (holly-leaved Berberry).—Berberidaceæ.—A very rare and beautiful species, in its native localities forming a straggling bush about eight feet high, with angular stems, and obovate acute stalked leathery leaves, dark shining green above, and coarsely and distantly serrated, so as to have the appearance of holly leaves. The flowers grow in axillary racemes, they are globose, and of a full golden or orange yellow colour, followed by sub-globose steel-blue coloured berries. A native of the coasts of Fuegia, beyond the Straits of Magalhaens, whence living plants were brought by the Antarctic expedition. Introduced in 1845. Flowers in March. *Culture.*—No doubt hardy, but as yet (1847) so rare as to be untried; loamy soil; propagated by layers. (168)

RHODODENDRON JAVANICUM, *Bennett* (Java Rhododendron).—Ericaceæ § Rhododendreæ.—A beautiful evergreen shrub, apparently free growing and robust, with large acutely oval shining foliage, and bearing at the ends of the shoots a large bunch of beautiful deep salmon-orange coloured flowers, which are large and well formed, and quite distinct. A native of Java, on Mount Salak, at an altitude of 4,000 feet. Introduced in 1846 by Messrs. Veitch. Flowers in May and June. Also called *Vireya javanica* (Blume) and *Azalea javanica* (Blume). *Culture.*—Mr. Veitch finds the treatment proper for the Indian Azaleas agreeable to it: greenhouse, with a higher temperature during growth; sandy peat; propagated by cuttings in sand in a moderate heat, and by budding and grafting. (169)

EPIDENDRUM PLICATUM, *Lindley* (plaited-lipped Epidendrum).—Orchidaceæ § Epidendreæ-Læliadæ.—A handsome epiphyte, with ovate-oblong pseudo bulbs, bearing at top a pair of sword shaped leaves, from between which issues the raceme of flowers; the latter are large and showy, the sepals greenish, stained with dull purple on both sides, the petals green inside, with a few purple stains near the point, and deep rich violet on the outside, and the lip rich purple, the central lobe beautifully plaited and deeply cordate. A native of Cuba. Introduced in 1846. Flowers in January. *Culture.*—Requires a moist stove; potted in turfy peat; propagated by division of the plant. (170)

SOLANUM JASMINOIDES, *Paxton* (jasmine-leaved Bitter-sweet).—Solanaceæ § Curvembryæ.—An elegant climbing plant, smooth both in its stems and leaves. Its leaves are sometimes pinnatifid, sometimes ternate, sometimes quite undivided. The flowers grow in cymose panicles at the ends of the shoots; they are shaped like those of the common bitter-sweet, and vary from pale bluish lilac to nearly white. It is a very pretty climber, but probably not really distinct from the old *S. Seaforthianum.* Its native country is not certainly known, but it is "considered to be South American." Introduced about 1839. Flowers throughout the latter part of the summer and the autumn. *Culture.*—Trained against a wall with a south aspect it is hardy, and becomes very ornamental; good common soil; propagates freely by cuttings. (171)

BOMAREA HIRTELLA, *Sweet* (hairy Bomarea).—Amaryllidaceæ § Alströmerieæ.—A climbing plant, growing seven feet high, with long leaves, hairy underneath, the stems terminated by a bunch of fifteen or more flowers; the flowers are in six segments, slightly spreading at the top, the three outer red, the inner ones green spotted with red. A native between Mexico and Tolucca. Introduced in 1824. Flowers from July to September. *Culture.*—Nearly hardy in sheltered borders; light loam; propagated by division of the roots, and by seeds, which ripen in most seasons. (172)



THE KITCHEN GARDEN.

Sow beans, borage, cabbages, carrots, coriander, chervil, cress, endive, kidney-beans, lettuce, onions, parsley, peas, radishes, rape, rampion, scurvy-grass, salads, spinach, and turnip.

Plant and Transplant borecole, brocoli, cauliflowers, cabbage, celery, celeriac, endive, leeks, lettuce, mint, potato, and savoy.

General Directions.—Continue to sow and plant successional autumn and winter crops. Attend to hoeing and weeding. Prick out and thin out seedlings : gather ripening seeds and herbs. Clear the ground as the crops are used up. Water where required, especially crops that are now planting.

Asparagus.—Follow up the operation of watering, if the weather is dry, and discontinue the cutting from the established beds ; make them perfectly clean by hand-weeding.

Beans.—If the early crops were broken over last month, another sowing now would be superfluous.

Borage.—A sowing of this may be made in any common soil and place ; they do not require much care.

Borecole.—Plant these out on the potato ground, or where any spare place can be obtained, for use in spring.

Brocoli.—Make full plantings at the beginning and end of the month ; they will follow other crops as the latter are cleared off.

Cabbage.—Plant late for coleworts ; and prick out and sow a few more early, to plant in autumn for winter and spring use.

Carrots.—A few may be sown on good ground, if a supply of young ones is wanted ; thin out and hoe the advancing crops.

Cauliflowers.—Plant a full crop at the end of the month, and prepare or reserve ground for sowing on next month.

Celeriac.—Plant out early in a plain bed, in rows fifteen inches apart, and ten inches between.

Celery.—A main planting may be made early this month ; and prepare to make another at the end.

Chervil.—Unless a sufficient number of self-sown plants have sprung up, it will be well to scatter a few seeds in any spare corner.

Coriander.—Sow on a bed of good fresh earth, in an open situation.

Cress.—Make a considerable sowing of the common kind for succession ; and sow also, at the end of the month, the Normandy, for autumn use.

Endive.—For a winter and spring crop, sow at the end of the month : plant out a few, watering them well.

Garlic.—Lift the bulbs when the leaves turn yellow, dry them carefully, and put away the sound ones for winter use.

Herbs of all sorts should be gathered and dried when about to bloom ; they may be propagated now, as required.

Kidney Beans.—The last planting should now be made in a warm spot, and the earlier the better. Water the drills before sowing, if the soil is dry.

Leeks.—A few may still be planted out; hoe and earth up the crops beginning to grow freely.

Lettuce.—Plant again for succession; also sow every three weeks: if they are thinned in the bed, they will come into use earlier, and the thinnings if planted out will form a succession.

Mint.—Cut, and dry in a shady place when coming in flower: if required, the roots can easily be divided now, and increased.

Onions.—The winter crop should be ripe; gather them and store away carefully: make a small sowing to draw young for salads; prepare ground to sow next month.

Parsley.—Thin out the early sowings; to secure a fresh and vigorous supply through the winter, sow on a warm spot, where a frame could be placed over it in autumn and winter.

Peas.—Stake advancing crops: put in the last sowing about the middle of the month, and let it be an early sort; also make a sowing immediately, and see that the spot is warm: top the late sorts when about four feet high, and water all with a weak solution of nitrate of soda.

Potatoes.—Dig between the rows previous to earthing up. Chapman's kidneys, planted now, will supply new potatoes in winter.

Radishes.—Continue to sow for succession in a cool moist situation; if they are much in demand, sow a few once a fortnight; the turnip-rooted kinds do best at this season.

Rampion.—Gather the seed, and sow at once, on a light, rich, and moist soil; rake the seed lightly in.

Rape.—Sow at the end of the month; it is hardy, and not particular as to soil.

Salads.—Continue to sow nearly every two weeks the small things, as mustard and cress; half as much seed of the former as of the latter will suffice; grow all fast so as to be tender.

Savoys.—Plant out more where there is room; hoe amongst the others.

Scarlet-runners must have branched stakes put to them at once, if not already done; they should be from five to eight feet high; they are all the better for being sometimes topped.

Scurvy-grass may be sown now, or the roots of the established plants may be parted; it is used as a salad, and medicinally.

Shallots will be ready, or nearly so, for taking up and getting dried in an airy place, previous to storing.

Spinach.—Prepare ground for the August sowing: sow early this month for succession; thin out the previous crops.

Turnips.—Make a full sowing now; hoe and thin the others to six inches apart.

THE FRUIT GARDEN.

General directions.—Persevere in thinning, pruning and nailing, shortening the young shoots only where more wood is required. Commence budding. Protect the fruit against the ravages of birds, wasps, &c.; and gather it as it ripens. Have the fruit-room thoroughly washed and cleaned, before any of the kinds are put into it. Hoe as much as ever, and destroy insects: transplanted and heavily-laden trees are bettered for mulching and watering, if the weather is dry. Sometimes it is desirable to prop up the branches of trees heavily laden.

Apples.—Remove the breast wood from espaliers and wall trees; also partially thin the standards, and tolerate no overloading deformed fruit.

Apricots.—Secure and nail in the young shoots; slight thinnings may also be effected: have all the fruit exposed as much as possible to the sun. In good seasons, early sorts may be gathered at the end of the month, they will preserve for a few days if laid in a cool place. Bud choice sorts on plum stocks.

Cherries.—Protect and gather carefully; also prepare the later sorts for being netted. Bud on the wild black cherry stock.

Currants may now be much improved by judicious thinning, both of wood and fruit, yet it is seldom attended to, unless when they are grown for competition.

Figs.—Give all possible light and air to the fruit, yet do not take off a leaf if it can be avoided; remove any late and crude growth.

Gooseberries.—Thin out those to be used for dessert; also, thin out the young wood where necessary. Cuttings of the young shoots planted now will be rooted by autumn; and this plan is useful where it is desired to increase any choice variety.

Nectarines may now be budded upon the inferior peach and nectarine trees; the branches of which may be afterwards lopped off as the buds succeed. The best stock, however, is the muscle plum: hasten on the ripening of the wood and fruit, which thinning and nailing assists materially.

Peaches require the same treatment. Mulch and water the transplanted trees, also those with heavy crops; do not let the young trees bear too many fruit.

Pears.—The breast wood must now be broken down, and the leaders tied and nailed in, whether in walls or espaliers. Look over standards also, and thin where necessary; regulate the growth of grafts and young trees. Make provision for young bearing wood on the old wall trees, by laying in plenty of young shoots. Bud on pear or quince stocks: those budded as standards, say from four to six feet high, bear soonest; but low budding about six inches from the ground is most commendable

Plums.—Many kinds bear best on the young wood; provide accordingly: give a final thinning to the fruit.

Raspberries, if not ripe, will be much benefited by a good watering of clear liquid manure. Do not damage the suckers which are to form next year's bearing shoots.

Strawberries.—Special attention is requisite now to get a stock prepared for forcing; indeed, upon attending to this early, much of the success depends: lay the runner into three inch pots, and on the runner place a stone to keep it steady; use a soil of rich loam, with a little leaf mould, or very rotten manure: they may be laid into larger pots at once. Cover up the ripening fruit from birds; and those to be used for preserving must be gathered perfectly dry.

Vines.—Forward, by exposing the fruit as much as can be to the influence of the sun; and take away all the after growth, in the form of laterals, &c.

THE FORCING-GARDEN.

General Directions.—The late crops will be at their utmost luxuriance, and a gradual, not sudden pruning must be attended to. Those houses and places where the crops are being cleared, must have continued drought, until all the fruit is gone; when in some cases, a thorough syringing, and a throwing open must take place; in others, a cutting back to force for another crop. In all cases, take the outline of treatment from what nature gives; and if possible, assist and improve upon it; and, although, in a certain sense, we cannot surpass nature, yet, from certain artificial adaptations, we can aid her, and we may be sure she will amply repay all our toils.

Apricots.—Temperature, from 60 to 80 degrees by day, and 55 degrees at night. They should be ripe; gather them in the morning: hang up wide-mouthed bottles half full of sugared beer, to entrap wasps, ants, &c.; they require to be cleaned occasionally. When the fruit is cleared, expose the trees, and give them a thorough syringing.

Cherries.—Temperature ranging from 45 to 70 degrees. Give air very freely, and, if practicable, strip the house; or if the plants are moveable, they should be set out doors.

Cucumbers.—Temperature from 60 to 90 degrees. Go over those lately planted, and thin gradually; avoid impregnation, except for seed; cut back the early plants and start anew, if not already done. Water all with liquid manure, and shut up with a brisk heat, even so early as two, p.m., after watering. The fruit should be cut whenever ready, and their stalks placed in water: they also keep well if laid on a sward of green turf in a cool shed, and covered with a hand-glass.

Figs.—Temperature from 50 to 80 degrees. The ripe fruit is readily distinguished by a pearly drop seen at the eye of the fruit, or by the decay of the stalk; it must be gently handled, and used as soon as gathered.

Melons.—Temperature from 65 to 90 degrees. Some of the more hardy sorts will do in a very warm place out of doors, but not without trouble and uncertainty. The early plants which were cut back for another crop, should have liquid manure in addition to some fresh soil, and should be kept rather close; give air night and day when the ripening fruit is cut; and when cut, lay it in a cool place, for a day or two. Thin and regulate in good time—almost daily, at certain stages. If canker appear, apply more heat, less moisture, and dust the affected parts with lime.

Mushrooms.—Temperature from 55 to 60 degrees. Beds are successfully formed and treated out of doors; still this can be done with equal facility in a house appropriated to them, if insufficiency of room is no objection: slight waterings all over the house are beneficial.

Musas.—Temperature from 60 to 90 degrees. Still treat lavishly, withholding stimulants, in some measure, from those which are ripening off their fruit.

Nectarines.—Temperature from 55 to 80 degrees. Give air night and day; also to the late houses. Entrap the wasps, &c., with bottles of beer and sugar.

Peaches.—Temperature from 55 to 80 degrees. The early houses should be thrown open; those in which the fruit is in a forward state, should be sparingly watered; and the latest ones kept with a moist steady heat, and plenty of air.

Pine Apples.—Temperature from 65 to 90 degrees. Maintain a lively moist heat in all the departments, but keep the fruiting pit driest. Sprinkle over the leaves in the morning and early in the afternoon, at the latter period using clear liquid manure. Turn out one or two of the succession plants, and by their state decide about the time of shifting them; have the requisite soils, as strong loam and peat, and charcoal and other drainage, always in readiness. Give a little air at night to prevent weakness; and a slight shading for an hour or two in very scorching weather is commendable, especially to the shifted plants, and those near the glass. Keep the pathways, flues, &c., in a damp state.

Vinery.—Temperature from 60 to 80 degrees. Where the ripening and ripe grapes are, the atmosphere must be kept dry, and air given abundantly. In the later houses thin the shoots and fruit with freedom, and repeat the operation; maintain a steady moisture, and syringe gently. Syringing (where a moist atmosphere can be attained and kept up) is almost unnecessary, the more so that fire-heat can now almost be done without.

FLOWER GARDEN AND SHRUBBERY.

Sow early a few more annuals to bloom late in the season; also a few biennials and perennials.

Plant and Transplant all hardy and half-hardy annuals; also greenhouse plants, wherever required to fill up vacancies in the beds or borders; such as are planted out of pots, should have the balls of earth a little loosened; give them all thorough waterings.

General Directions.—Get up, without delay, all tuberous roots, as anemones and ranunculus, also tulips, &c., and have their places immediately filled with annuals brought on in pots, such as stocks, &c.; greenhouse plants will also come in. Attend to staking and tying up every plant that requires it. Go on with the mowing and its accompaniments. Persevere with the propagating of herbaceous and shrubbery plants by layers, cuttings, slips, and budding. Have everything that is to be planted out done as soon as possible.

Alpines.—Go over and cut away the dead flower stalks, and free them from weeds; make the drainage perfect; of course they are kept in a shady situation. Foster and increase the most interesting, whether from rarity, beauty, or curiosity; keep those dryish that have died down; and the whole would be bettered by a slight top dressing. Some skill must be exercised here as to the watering of those which are *growing*, and those which are *matured*; the former, of course, require the largest supplies.

Anemones.—Those lifted last month may now be stored away carefully, and the late tubers should be taken up, where in beds, and laid out to dry.

Annuals sown now, must have good situations to flower this season. This is a good time to sow stocks, mignonette, &c., to flower in pots through the early part of the winter. Remove those past a flowering state, and if not before, refill their vacancies with others, or something ready to flower.

Auriculas.—Continued attention to stirring the soil, drainage, and picking off the dead leaves, is necessary. Those whose leaves, as it were, roof over the soil in the pots, must be carefully watered.

Brugmansias, or *Daturas.*—These are fine objects in the flower-garden, either planted out or plunged; give them a sheltered spot, and apply liquid manure largely.

Carnations.—Tie loosely, and so as the tie may slip up a little with the increasing growth. As the buds indicate bursting, open the calyx gently at each division, down to the bass or worsted tie around the middle, and as the large petals develope, draw them down carefully to the card; those show flowers with faulty petals must have them withdrawn: apply now a little liquid manure, and at other times use pure rain or river water: go on with the propagating.

Chrysanthemums.—Now is an excellent time to strike a number, by taking off the strongest tops of the shoots three inches long, and potting them in small single pots, and putting them in a little heat; when struck, harden them off, shift them, and place them in a warm and sunny situation, plunging the pots, if possible. Prepare to lay a quantity early next month.

Dahlias.—See that the supports for the plants are sufficient, as a gust of wind may in a moment render all previous care, as well as the plant for the future, useless: remove the weak and over-crowded laterals, and those only; propagate the fine sorts; the roots so formed, and allowed to ripen and remain in the cutting pots, are the most valuable; it may also be well to bear in mind, that those roots much stimulated by liquid manure, are not to be depended upon. Untiringly attend to keep down insects, and water profusely.

Erythrina cristagalli forms a most noble plant as a single specimen; plant or plunge in rich turfy loam and dung. In the south and west of England it will stand as a hardy perennial under favourable circumstances.

Fuchsias.—Hasten them on with liquid manure; few things grow quicker under this treatment: *starve* them a little towards the end of the month.

Hollyhocks must be thinned, and have long and strong stakes put to them; their grandeur will be enhanced by giving them clear liquid manure once a week.

Jasmines, *Honeysuckles*, and all fast growing climbing plants, should be now looked over, pruned, and nailed in, or tied up, as the case may be.

Lobelias.—Encourage these by watering the strong growing sorts with liquid manure; keep them at all times well supplied with water.

Mignonette luxuriates in liquid manure, whether prepared from guano, pigeons' dung, or the stable-yard: water only at the roots, and sow in pots for winter.

Pansies.—Plant out the seedlings in a rich soil of loam and leaf mould, or rotten dung and sand; propagate from the old and good sorts; they will strike readily under a hand-light in a shady situation, amongst sand and leaf mould.

Picotees.—Remove the self or run petals from the show flowers as soon as they appear; they must have cards, the same as carnations, upon which the guard petals are to be evenly laid back; it matters not whether the card has a hole in it or not, if a small space in the centre is cut across three times, making six angular points: propagate by layers, and treat every way as carnations.

Pinks.—Cut off the dead flower stalks; propagate quickly; the pipings strike readily under a hand-light, keeping the sand moist; they will also strike without sand, and some prefer it.

Roses.—Strike the China varieties in a slight heat; indeed we have seen every sort, even the moss, so struck, but it is uncertain; the Hybrid Chinas succeed in this way admirably. All may be, and should be budded this month, if to be done at all; and the *quicker* the operation is gone through the better. Take off all the faded and fading flowers, syringe with tobacco water to destroy aphides; follow it up until they are overcome.

Ranunculus. — Take up as soon as the leaves fade, otherwise they are subject to the attacks of vermin. Treat them as those lifted last month, and mark them carefully before putting them away.

Stocks.—It is not too late to make another planting; they are hardier than most other things, and equal in beauty.

Tulips.—Take up, dry, and store away; and so with other spring bulbs. The hyacinth may be considered an exception, for without extra care they are seldom so good the second season, and it is generally considered more economical to purchase the imported bulbs annually.

Violets.—Encourage the plants by stirring, and in some cases renewing the surface soil; look often at them, and many things will suggest themselves, as being not only beneficial, but necessary, for which no directions could have been given; they must not be suffered to become dry, and rather prefer shady and moist treatment.

WINDOW GARDENING.

The point of first importance is, never to allow any of the plants to suffer from dryness at the root. Keep them regularly watered, and syringed over the foliage, so as to render them perfectly clear of dust. Use manure water of any description occasionally, to any of the strong growing plants; but do not use it in too great quantities, or too strong, as in either case the plants will grow away to leaf and branches, and comparatively few flowers would be produced. Remove the fading flowers or foliage, and regularly train the plants to the particular object in view, especially the climbers, which, if neglected for any length of time, will become unmanageable.

Bulbs, as hyacinths, &c., should have the supply of water gradually reduced, as the foliage attains its full growth, and begins to wither, so as to enable the roots to become thoroughly ripened.

Begonias will require a considerable supply of moisture in dry weather, but it should drain freely away from the pot; stake and train out as necessary.

Camellias.—Encourage a vigorous growth by regular waterings, and keep the foliage clean by copious syringing, and even by hand washing when necessary. Lessen the supply of water to such as have completed their growth.

Cinerarias should be shaded from fierce sunlight, and kept cool at the root by liberal waterings.

Fuchsias.—Regulate as they advance in growth, and water copiously, as, if they get too dry, they will shed the greater part of their leaves and flowers. Use manure water occasionally. Shift them when the pots get full of roots.

Geraniums.—Those out of bloom should be cut down to within a few eyes of the old wood, and placed in a hot situation fully exposed to the sun. Water sparingly, so as not to excite them into renewed growth, but to enable them to thoroughly ripen the wood previous to preparing them for the next season.

Myrtles, and other evergreens, should be freely watered, especially if much exposed to the sun: syringe often, so as to keep the leaves free from dust.

Roses.—Keep the old flowers cut off as they decay, and prune back the old flowering branches to the new shoot or bud from which the next flowers will proceed in the Chinese and allied sorts. Water these copiously, using manure water occasionally.

Primulas.—Shift as the plants require it, keeping them in a cool place, shaded from the direct rays of the sun; water freely.

Violets.—Those planted out for potting up in autumn, should be well watered in dry weather, and the ground kept well stirred amongst them to encourage a vigorous growth; keep them clear of weeds.

Wardian Cases.—Replace any deaths by introducing new plants, and regulate the established ones, so as to prevent their interfering too much with one another. The dwarf growing cacti do very well in these cases, and, if planted on a piece of rockwork, are very interesting, from the great number of dissimilar forms which may be grown in very limited space.

PITS AND FRAMES.

The principal operations will consist in forwarding the growth of such plants as are placed in these structures for that purpose. In nearly all cases a great quantity of air must be given, and sometimes the lights should be wholly removed at night.

Annuals.—If any are still left, they should be shifted as they require it, and occasionally supplied with liquid manure. About the end of the month some ten-week stock seed should be sown, to produce plants to bloom early in spring.

Half-hardy plants, as petunias, verbenas, &c., should be propagated as fast as cuttings can be procured, especially any new sorts, or such as may be particularly desirable. Those which are intended for forcing, as pelargoniums, heliotropes, calceolarias, &c., should be grown away, and be kept regularly stopped so as to form bushy heads, and also to prevent their flowering. Keep them regularly shifted until they are in the required size pot, and shade them as soon as the sun acts powerfully on the glass, especially when fresh shifted.

Green-house plants placed in these structures to make their summer growth, must be regularly and copiously supplied with water, both at the root and over head. Shift when necessary, especially the stronger growing sorts: shade in bright weather, but remove the lights entirely at night, in fierce weather, and protect them from heavy rains. Stop, thin, and tie out the shoots as they advance in growth.

Forcing Pit.—Many bulbs will have perfected their growth, and as the leaves begin to decay, gradually reduce the quantity of water until they are perfectly dry, keeping them near the glass, and thoroughly exposed to the sun to ripen. Keep all growing plants regularly watered and syringed, night and morning, and maintain a moist atmosphere by evaporating pans, and by constantly watering the walks. Shade such plants as soon as the sun-heat becomes powerful, and give air freely.

THE GREEN-HOUSE.

Temperature.—From 60 degrees to 70 degrees by day; and from 50 to 60 degrees by night.

Ventilation.—Give air freely, so as to keep the temperature nearly as indicated above. Air should be left on all night, except in wet or windy weather, when all should be made secure before the house is left.

Watering.—Never allow any plant to *flag* or droop its leaves for want of moisture; and be sure those in pots are thoroughly soaked through the ball: syringe freely, especially in the evening in bright weather, so as to allow the plants to recruit their strength before morning.

Potting.—Continue to shift such plants as require it as they advance in growth; in doing so, loosen the old ball of earth so as to make sure that it will not remain as a lump in the centre of the new soil, into which water cannot penetrate. Keep the plants close and shaded until they recommence their growth, when they will also need a more liberal supply of water than immediately after being shifted.

Soils, &c.—Take all opportunities to increase the store of materials for different composts, and keep them in large heaps at present, so that they may not get too dry for use. The pots in which the summer bedding plants were grown, should be washed, sorted, and stacked, ready for use again; if in a shed or other dry place, they will be handier for use at any time.

Dressing. — Keep every thing neat and clean; tie up climbers, and stop such as require it. See that the leaves of the plants are perfectly clean, and free from dirt and dust.

Insects.—Destroy all of an injurious character as soon as they make their appearance. Guard in particular in the hot dry weather against thrip and red spider, especially on the climbers and taller plants, where they sometimes escape notice until considerable damage is done.

Aloes and succulents generally should be kept growing by a good supply of moisture and free exposure to light, heat, and air.

Agaves and large succulents should be grown fast, by placing them in a hot exposure, and watering them freely. An occasional dose of manure water will be serviceable.

Alströmerias.—Such as have done flowering should have the supply of water gradually reduced as the foliage decays and the seed-vessels ripen. They should be placed in a hot sunny exposure, but where they may be sheltered from heavy rains.

Annuals.—Remove those in a shabby state, and replace them with some of the later sown crops. Supply them abundantly with water, and keep them near the light, and give them air freely to prevent their drawing up weakly.

Azaleas.—Place such as have perfected their growth out of doors in a sheltered situation, where they can be protected from heavy rains. Forward the growth of the later plants, so that they may begin their rest before the heat of the autumn is passed.

Calceolarias.—Cut down the old plants, and propagate from the best of the cuttings. Keep the plants in a cool frame facing the north, and shade in bright weather. Water freely, and guard against green fly, whose attacks are peculiarly hurtful to these plants.

Camellias.—Place such as have completed their growth out of doors, in a situation where they will be shaded from the mid-day sun, and also protected from too much moisture. Keep the smaller plants in pits, giving plenty of air, shading during bright sunshine, and taking the lights off on warm nights. Such as have not completed their growth should be kept moderately close and warm, and in a shady part of the house.

Cape Bulbs, as ixias, gladiolus, &c., should be gradually dried off, and kept exposed to the full light and heat of the sun, in any situation where they can be protected from heavy rains.

Cephalotus follicularis (New Holland pitcher-plant).—Keep in a shady but airy situation, and do not let it suffer for want of moisture.

Cinerarias.—Shift such as require it, and grow them in cold frames or pits facing the north ; water freely, occasionally with manure water ; shade during bright weather, and remove the lights at night. Pot off a successional batch of suckers, and treat them like the others, keeping the frames rather close until they are well rooted.

Chrysanthemums.—Layer those turned out, into small pots filled with rich sandy soil, and fix them by using pegs long enough to penetrate four or five inches through the pot into the ground beneath. Water regularly. Shift such as require it, and stop the shoots so as to make them branch : keep them in a rather shady place, and water freely, occasionally with manure water.

Crassulas, and allied plants, as sempervivum, should be sparingly watered, if they have stopped growing ; if otherwise, water abundantly, and expose them to the greatest amount of light and heat attainable with a free circulation of air.

Cyclamens should be kept so dry as not to shrivel up too much ; place them in an airy situation.

Epacris.—Grow away in the house or in pits, shading in bright weather, and maintaining a free circulation of air about the pots and plants. Be very attentive in watering, that the balls be thoroughly soaked.

Ericas.—Shift such as require it, and stop those that are growing in a straggling manner ; place the coarser growing sorts in a sheltered situation under an awning, by which they can be protected from the sun and rain, but roll it up on every fine night, so as to expose the plants to the action of the dew or light showers. In potting use plenty of drainage, so as to ensure the rapid passage of the superfluous moisture when the plants are watered. They now require water often, and in considerable quantity, so as to ensure the earth being kept in a regular moist state. The smaller plants and more tender species should be grown in pits, where they should be kept near the glass, and freely ventilated ; they should also be exposed at night in very fine weather.

Fuchsias.—Shift such as require it, especially if large specimens are wanted: water copiously, occasionally using manure water. Cut back some, to form a fresh growth to bloom late in autumn, and propagate any desirable sorts. Fumigate if the green fly makes its appearance, and syringe to check red spider.

Gompholobiums and slender creepers should be regularly trained to their trellises, so that every part may be equally furnished with young wood, avoiding too upright a direction, in order to prevent the young shoots from bunching at the top of the trellis, and thus leaving the bottom bare.

Haworthias, Apicras, &c.—Keep them in a warm situation, and water freely if they are in a growing state. Expose them fully to the sun, and maintain a free circulation of air about the pots and plants.

Helichrysums.—Grow these in a light airy situation, and water freely as long as they are growing, guarding against stagnant water about the roots at all times.

Leschenaultias.—Shift if necessary, and keep the plants in a light airy situation, shading in the middle of the day ; such as have completed their growth may be put on an airy stage in the house, and the supply of water may be gradually lessened for a time.

Lilium japonicum (Japan Lily).—Keep in an airy and rather cool place, and water freely as they advance towards flowering, using manure water occasionally.

Mignonette.—Sow in pots out of doors, to introduce when in a flowering state ; stop and train the plants intended for trees or bushes to a single stem, cutting out all the flower buds entirely.

New Holland plants, as acacias, hoveas, bossiæas, &c.—Water regularly, and stop luxuriant shoots so as to form a neat head : shade the more delicate sorts, and guard against worms in the pots.

Orange Trees.—Water and syringe copiously, using manure water about once a week while plants are growing. Regulate the heads, and protect those out of doors from damage by strong winds.

Oxalis.—Withhold water from those whose foliage is dead, and place the pots in a dry, hot, and airy situation.

Pelargoniums.—Cut down those out of flower, and place them out in a hot dry exposure, giving very little water, and protecting them from heavy rains. Those which were earlier treated thus should now be potted : shake the old earth entirely away from the roots, and prune them well in ; pot them in small pots, using a sandy, rather poor compost ; place them in rather close frames, and water very sparingly. Sow seed as soon as it ripens, and pot off the plants as soon as they have formed about three rough leaves.

Primulas.—Sow the seeds now for a main supply; use a compost of free loam and peat, with a sufficiency of sand to keep it porous; sow thinly and cover lightly. Propagate the double varieties by parting the old plants into separate crowns or shoots, and pot them, or make cuttings of them, as they may have roots or not; keep them close in a pit, and rather dry until they commence to grow again.

Proteas, Banksias, Dryandras, &c.—Water carefully, and regulate their growth so as to form neat plants; if placed out of doors, protect from high winds and heavy rains.

Rhododendrons.—Plunge the pots in earth or ashes, and mulch the surface with moss or other material, to prevent the action of the sun on the young roots at the side of the pot. Water regularly and copiously, and keep the leaves clean by syringing.

Roses.—Young plants of the Chinese and related sorts should be shifted as they require it, and the shoots should be shortened so as to produce a regular head: protect the pots of those placed out of doors in a similar way to that recommended for Rhododendrons. Use manure water occasionally, and syringe with dilute tobacco water whenever the green fly appears.

Salvias.— Shift, stop, and regulate the plants as they advance, and remove the flowers from such as are wanted for late bloom. Propagate by cuttings in a slight bottom heat.

Stapelias.—Continue to water freely as they advance, keeping them in a warm airy place, and strong light; watch the drainage, that no stagnant water may lodge about the roots.

Tropæolums.—Dry off the bulbs as the foliage decays, and keep them dry until they break naturally. Care should be taken that after being dry some time, they do not get accidentally wetted, as they are liable to start off into a weak spindling growth.

THE CONSERVATORY.

Temperature.—From 60 to 70 degrees by day, and from 55 to 60 degrees by night.

Ventilation.—Maintain a free circulation, and leave considerable air on all night in hot weather: allow no openings on the sides affected by strong winds.

Watering.—Water should be applied freely to all plants in bloom, or making their growth; such as are planted out should be carefully examined at the root, and well soaked: syringe night and morning, cleaning up all water from the paths in the morning, that they may be early dry.

Arrangement.—As a great portion of the plants now in flower here, consist of annuals, great variety may be obtained by continually altering, contrasting, and harmonizing the various colours, placing them sometimes in masses of one colour or sort, at others, blending all together, of course avoiding as far as possible all straight lines.

General Directions.—Continue to maintain the most scrupulous neatness in every respect. Watch for insects, especially the red spider, and apply immediate remedies. Constantly tie up, stop, and regulate the climbing-plants, taking care that they are properly thinned, so as not to present a heavy appearance in the house. Remove all plants as soon as they look at all past their prime, especially annuals, which soon present a shabby appearance at this season.

THE PLANT STOVE.

Temperature.—From 70 to 85 degrees by day, and from 60 to 70 degrees by night.

Ventilation.—Give air freely, as far as the weather permits, closing the house early in the afternoon. Open very little on the windy side, not at all in high winds.

Watering.—Use water abundantly to the roots and leaves, by the syringe and as steam. Keep the floors flooded, and the evaporating pans full. Syringe night and morning, and fill the house with steam at the same times.

Potting.—Continue to shift all such as require it, apportioning the size of the pots to the strength of the growth. Stake, stop, and otherwise regulate the plant at the same time. Keep them close and shaded until they make fresh root.

Insects.—Use every exertion to keep these under, as soon as they show themselves; plants very foul with scale or mealy bug should be destroyed, or kept apart from the others, and not admitted to the collection until perfectly clean.

Achimenes.—Pot any bulbs which may be left, or shift such as have been grown in a low temperature, and excite them to increased growth; they will be useful in autumn and winter. Shift such as require it, and remove those in bloom to the conservatory.

Allamanda, Beaumontia, Echites, and other strong growing climbers, must be regularly stopped and trained as they advance. Water liberally, and syringe as often as possible.

Alpinias, Hedychiums, and other reedy plants, should be shifted as they require it, and any in bloom should be removed to a warm part of the conservatory; abundance of water should be given until the leaves begin to decay.

Aphelandras, Justicias, Ruellias, &c.—Shift and regulate as they advance in growth; water copiously, and syringe often, as they are very subject to red spider.

Amaryllids.—Diminish the supply of water as the leaves decay, and remove the pots to a dry and hot exposure; place them on their sides to avoid accidental wettings.

Begonias.—Encourage as they advance, and remove the flowering ones to the conservatory; pot any intended for winter flowering, or such as flower naturally then and in the spring.

Burchellia.—Propagate by cuttings of the half-ripened wood, in sand, under a bell glass, in bottom heat.

Cacti.—Pinch the ends of the shoots of such as have nearly completed their growth, and reduce the allowance of water. Set out such as are intended to be forced in a hot dry place where they can be protected from rain.

Cinnamomum (Cinnamon tree).—Water regularly and carefully as it advances, and keep the foliage very clean.

Clerodendrons. — Remove the flowering plants to cooler quarters: increase desirable sorts by cuttings of the young wood in heat.

Climbers.—Continue to stop, tie up, and regulate as requisite; water freely, especially those turned out in the borders.

Daturas.—Shift as necessary, and train to a single stem; water freely, using manure water often.

Erythrinas.—Cut down any out of flower, and put them out in the sun without water for a fortnight; then repot them, and grow away again for another bloom.

Euphorbias.—Reduce the water to any which appear to have set their growth.

Ferns.—Keep very damp and shady. They may be propagated by division at almost any period; keep them close until they root.

Gardenias.—Propagate by cuttings of the young wood, in sand, in a strong bottom heat; keep them moist and close.

Gesneras, Gloxinias, &c. — Water the growing plants freely; those out of bloom sparingly. Pot roots of *Gesnera zebrina* for winter flowering.

Hippeastrum, Crinums, Pancratiums, &c. —Reduce the supply of moisture as the leaves decay, and withhold it altogether from such as entirely lose the foliage; the others should be watered more sparingly as their leaves attain their full size.

Ipomæas.—Shift as necessary, water freely, and guard against red spider, which soon injures the foliage of these plants.

Ixoras.—Propagate by cuttings of half-ripened wood, taken off with a heel and inserted in sand under a bell-glass in bottom heat.

Jasminums, Rondeletias, Brunfelsias, &c., may also be propagated in a similar manner to the Ixoras.

Lantanas.—Shift as requisite, and propagate by cuttings; water freely.

Luculia gratissima may now be removed to the conservatory to rest, previous to the production of its flowers.

Lycopodiums do best under similar treatment with their near allies the ferns.

Malvaceous plants, as hibiscus, must be copiously watered and syringed. The red spider is a terrible scourge to these plants, and should therefore be treated accordingly.

Manettias, and other tender climbers, should be constantly trained to the desired forms, and may be freely watered; shift as necessary.

Melastomas.—Remove flowering plants to the conservatory, and water those advancing freely; keep them in a warm part of the house.

Melo-Cacti.—Keep them near the light, and water them freely as long as they show symptoms of growth.

Musas.—Grow away by keeping them hot and giving an abundance of moisture, occasionally using manure water; syringe often and keep the foliage very clean.

Nepenthes (Pitcher plant).—Keep it in the hottest part of the house, and guard against its ever wanting water.

Neriums.—Such as have made their growth may be exposed out of doors to ripen their wood; lessen their supply of water.

Nymphæas (Water Lilies).—Keep them near the light, and change the water about them so often that no scum or dirt may collect about the leaves or stalks.

Palms.—Be particular that the roots are in a healthy state, and syringe often and copiously.

Thunbergias.—Shift where necessary, and remove those in bloom to the conservatory; syringe often; they are very liable to suffer from attacks of the red spider.

Vincas.—Those which have got straggling in habit, may be cut in, rested for a while, and then started by the application of increased heat and moisture to flower again.

THE ORCHID HOUSE.

Temperature.—The warm or Indian house from 85 to 90 degrees by day; 70 degrees by night. The cool or Mexican house 75 to 80 degrees by day; 60 to 65 degrees by night.

Ventilation.—Admit air as far as consistent with maintaining the required temperature, but avoid all draughts or rapid transitions.

Watering.—Apply moisture freely to growing plants, but gradually withhold it from those which have completed their growth, and remove them to a dry part of the cool house.

Insects.—Examine the growing plants carefully, for their tender leaves, bulbs, and more especially their young roots, are favourite food for several insects as well as slugs and snails.

Potting.—Continue wherever requisite; be careful not to use too much sphagnum or other moss about the roots or pseudo-bulbs.

Shading.—Increase the thickness of this, if the sun is very bright and powerful, especially over the growing plants.

Soils.—Collect various soils during the long fine days, and stack them up for use.

Imported plants.—Water more freely as they advance in growth, and give them increased heat also. The best method of watering these, is to syringe them copiously.

Aërides, Saccolabium, and *Vanda.*—Any of these that have completed their growth should be gradually removed to cooler quarters, where they will have more light and less water.

Æschynanthus.—As these plants come into flower, remove them to a warm greenhouse, or a cool part of the orchid house, and keep them regularly watered.

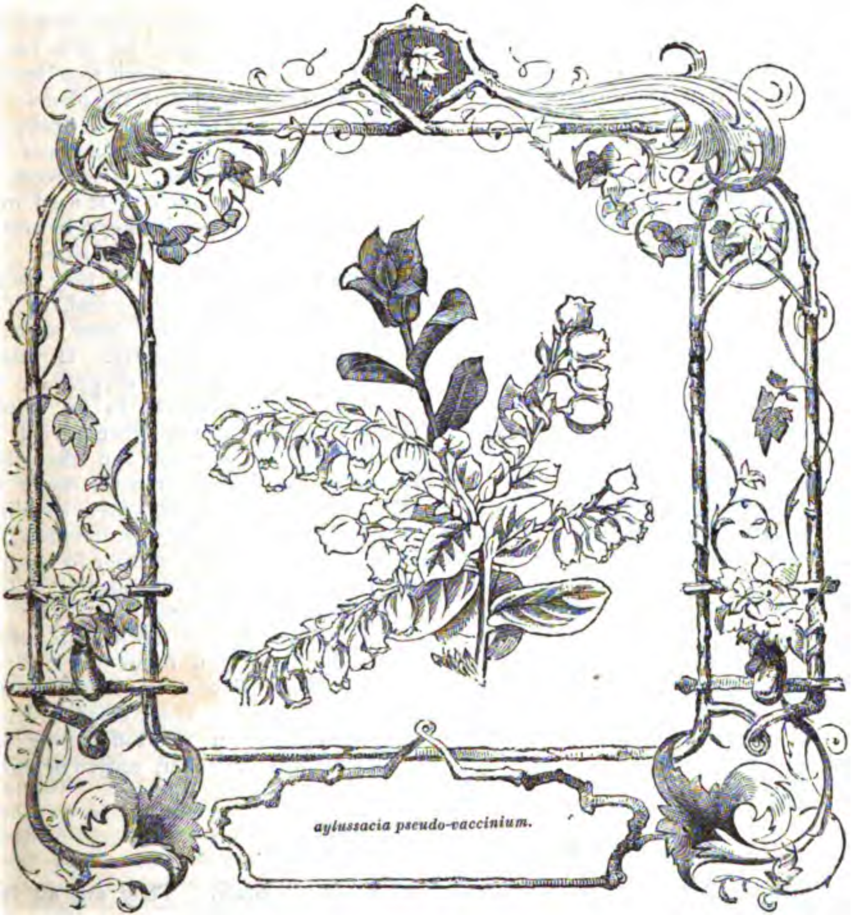
Cattleyas.—Pot such as show signs of growth, and place them in a hot, moist, and shady place.

Cymbidiums.—Encourage as long as they continue to grow; when they stop, rest them in a cooler house.

Dendrobiums.—Such as have made their growth should be exposed to powerful sunlight, and have very little water.

Oncidiums.—Remove these to the coolest part of the house as they show signs of completing their growth.

Stanhopeas.—Treat as the last, giving very little water after they are at rest.


aylussacia pseudo-vaccinium.

GAYLUSSACIA PSEUDO-VACCINIUM.

(Chamisso.)

BILBERRY-LIKE GAYLUSSACIA.

Those who are at all familiar with plants will recognise in the engraving which accompanies this notice, a near relation of those shrubs—chiefly evergreen ones—which in our gardens bear the old-fashioned name of Andromedas, or at least are most familiarly known under that title; for modern botanical science has assigned to many of them other titles, which are not very familiar with any but those who have a scientific knowledge of plants. Closely allied to this group is another, of which a familiar example is found in the common Bilberry (*Vaccinium Myrtillus*), which covers extensive tracts of waste land in various parts of our own country. A great many of the Vacciniums that are cultivated in gardens are, however, deciduous plants; as also are some of those which formerly bore the name of Andromeda. It is with this latter group—that of Vacciniums—that the plant here represented is most closely related; and we shall now direct our notice more exclusively to it. The relationship briefly sketched above, will be evident from the names the plant has borne, viz:—*Andromeda coccinea*, and *Vaccinium brasiliense*, given it by the olden writers.

This species of Gaylussacia is an evergreen shrub, of spreading habit, growing from two to three feet high, clothed with fine glossy green oval leaves, an inch or rather more in length, and which give to the plant a very interesting appearance, even during the winter months when devoid of flowers. On the approach of summer, its flowers are produced, and these possess much beauty: they are what is termed pitcher-shaped, that is to say, cup-shaped, and contracted at the mouth, and their colour is a most delicate and beautiful light rosy red. April, May, and June, are the particular months in which it is found to blossom; and this it does not sparingly but profusely, for the branches throw out numerous axillary racemes, and these bear from eight to twelve flowers. There is a peculiar gracefulness in the distribution of these racemes; they stand out laterally from the branches which support them, and being somewhat slender, the weight of the flowers gives them a graceful curve, and the flowers too are all turned as it were downwards, so that the flowers hang in a gracefully pendant curve. This arrangement of the flowers, so that they all point one way, is expressed by the botanical term *secund*.

The plant is a native of Brazil, where it grows in open sandy plains. St. Hilaire, a Brazilian traveller, found it near the town of Caravellos, in the province of Porto Seguro, and extending along the coast as far as the island of Santa Catherina. The first recorded plants raised in England, were obtained by Messrs. Loddiges, of Hackney, who obtained the seeds from a friend residing in Brazil; and from these seeds plants were raised about the year 1840.

It is found to be a greenhouse plant, well adapted from its handsome glossy foliage, in company with other evergreens, for purposes of ornament and effect, even when it has no flowers upon it. Peat soil is most proper for it; and it should have fibry turfy peat, containing a good sprinkling of particles of sand throughout its mass. To have fine plants, the roots must have the range of a considerable bulk of healthy soil, but it is better not to put them into pots which look inconveniently large compared with the plants; and in any case, the pots must be well drained, with a good layer of broken potsherds in the bottom, and some lumps of charcoal mixed among the soil, which is best used in great part in the form of small lumps, in preference to being too finely broken or sifted. While they are making their growth, they must have a liberal supply of water; and, in fact, as with all other allied plants, they ought never to be allowed to get very dry. If this takes place during the period of growth, it will cause the young shoots to be small and stunted; and if at any other period of the year, it will either cause the leaves to turn brown and unsightly, or cause them to fall off, in either case altogether spoiling the beauty of the plant. In other respects, it may be treated in a similar manner to heaths and similar shrubby greenhouse plants. The most ready means of propagation is by layers, which should be put down just before the young shoots begin to form.

Gaylussacia belongs to the large natural group of Ericaceæ, which comprises some of the most beautiful of all flowering shrubs, whether hardy or tender, native or exotic.

THE ANDROMEDA.

UNDER the title of Andromeda, a good many species of hardy Ericaceous shrubs were originally included; these have been subsequently separated by botanists into several genera, all of which are noticed below. The names of the genera as divided are:—*Andromeda*, *Cassiope*, *Cassandra*, *Zenobia*, *Lyonia*, and *Leucothöe*: of course those who prefer the old names will call all of them *Andromeda*. They are all include in that class of subjects generally known a American plants.

ANDROMEDA.

THE genus Andromeda, as now limited, contains but two species, of which there are several varieties. The name of Andromeda was applied by Linnæus, under somewhat

interesting circumstances:—Andromeda is known in mythology as the daughter of Cephalus, king of Ethiopia; she was bound, quite exposed and naked, to a rock, that she might be devoured by a sea monster, to appease the wrath of Neptune, but was delivered by Perseus, to whom she was afterwards married, and had many children. Linnæus, in recording his discovery of the plant, gives the following reasons for applying the name:—"Andromeda polifolia was now (June 12) in its highest beauty, decorating the marshy grounds in a most agreeable manner: the flowers are quite blood-red before they expand; but when full grown the corolla is of a flesh colour: scarcely any painter's art can so happily imitate the beauty of a fine female complexion; still less could any artificial colour upon the face itself bear comparison with the lovely blossom. As I contemplated it, I could not help thinking of Andromeda, as described by the poets; and the more I meditated upon their descriptions, the more applicable they seemed to the little plant before me; so that if these writers had it in view, they could scarcely have contrived a more apposite fable. Andromeda is represented by them as a virgin of most exquisite and unrivalled charms; but these charms remain in perfection only so long as she retains her virgin purity, which is also applicable to the plant now preparing to celebrate its nuptials. The plant is always fixed on some little turfy hillock in the midst of the swamps, as Andromeda herself was chained to a rock in the sea, which bathed her feet, as the fresh water does the roots of this plant. Dragons and venemous serpents surrounded her, as toads and other reptiles frequent the abode of her vegetable resembler, and when they pair in the spring throw mud and water over its leaves and branches. As the distressed virgin casts down her blushing face through excessive affliction, so does this rosy coloured flower hang its head, growing paler and paler till it withers away. At length comes Perseus, in the shape of Summer, dries up the surrounding water and destroys the monsters, rendering the damsel a fruitful mother, who then carries her head erect." This incident shows that the mind of the great naturalist was not insensible of vivid and keen imagination, even when apparently overwhelmed with severe studies.

Andromedra polifolia, Linnæus (poly-leaved Andromeda, or Moorwort).—A low evergreen shrub, growing about a foot high; the leaves are oblong; the flowers in small clusters at the tips of the shoots, ovate, pitcher-shaped, flesh-coloured, or pale red, blooming from May to September. A native of various parts of the north of Europe and North America. There are several varieties, as —*angustifolia*, with narrow leaves; *ericoides*, heath-like; *grandiflora*, with large flowers; *latifolia*, with broad leaves; *minima*, with small flowers; *revoluta*, with the margins of the leaves bent back; *scotica*, a Scotch variety; and *stricta*, more erect in habit than the others. This plant has several common or vulgar names, as wild rosemary, poly-mountain, marsh holy rose, marsh cistus, moorwort, &c.

Andromeda rosmarinifolia, Pursh (rosemary-leaved Andromeda).—An evergreen shrub, nearly like the preceding, but with linear-lanceolate leaves, having the margins turned back; the flowers are nearly globose, white tinged with red; it blooms in June. A native of Newfoundland and Labrador.

These plants are propagated chiefly by layers, which root freely. They grow naturally in mossy bogs, and low wet places; and under artificial cultivation they require to be grown in moist beds of peat soil, and in an open airy situation. Unless the situation be damp, or is rendered so artificially, it is difficult to keep the plants healthy for a length of time; but where this condition is complied with, they grow freely, and are very interesting when in bloom. From their dwarf and compact habit they form very neat and pretty margins to beds of the larger growing American plants situated on a grass plot; or they may be kept in beds of less size in company with some of the smaller growing plants of this order.

CASSIOPE.

Cassiope hypnoides, D. Don (hypnum-like Cassiope).—A small creeping shrub of evergreen habit, resembling some of the creeping-stemmed mosses; it grows but two or three inches high: the leaves are loose, flat, and needle-like; the flowers are drooping, small, bell-shaped, one terminating each stool, white with a red calyx; they are produced in June and July. A native of the mountains of Lapland, Denmark, and Siberia, as well as the north-west coast of America. It is a plant of difficult cultivation.

Cassiope tetragona, D. Don (four-cornered branched Cassiope).—A small evergreen creeping shrub, of similar habit to the preceding, with small obtuse leaves, closely imbricated into four rows, forming a four-cornered stem; the flowers are white, more truly bell-shaped than the last, and produced from the sides of the branches, in March and April. It is a native of Lapland and Siberia in Europe, and of Canada, Labrador, and the north-west coast of America, and of the island of St. Lawrence. Difficult to cultivate.

Cassiope lycopodioides, D. Don (club-moss-like Cassiope).—A diminutive evergreen moss-like creeping shrub, with ovate leaves, imbricated in four rows, and somewhat bell-shaped reddish flowers, produced in June and July. It is a native of Siberia and the island of St. Lawrence, but its date of introduction to this country is not known.

Cassiope ericoides, D. Don (heath-like Cassiope).—A small creeping evergreen shrub, with erect branches, and very small leaves. A native of Dahuria and Kamtschatka. Neither the time of introduction nor its flowers are sufficiently well known.

The Cassiopes are plants of much interest, chiefly owing to their small size, their neat forms, and above all, to their rarity, caused by the difficulty which attends their cultivation. Natives of some of the coldest and most rigidly inhospitable climes in the habitable world, they are destroyed by the comparatively genial character of our own climate; and while in England we need for the most part to form hot-houses for the growth of exotic vegetation, in this case it is the difficulty of keeping them sufficiently cool that has to be contended with. After all that can be done, the keen, rigid, bracing air of their native habitats cannot be imitated, especially in low sheltered situations, and therefore the plants never acquire their full perfection. We would suggest the following course of treatment, founded on our knowledge and observation of the plants:—The soil should be turfy peat, of a sandy texture, mixed with a few lumps of broken freestone or charcoal, materials which from their porous nature tend to equalize the moisture of the soil—a point of much importance in their cultivation; for, though they require a moist and cool medium for the roots, yet an excess of moisture would in this climate tend to render the soil unfit for their growth; and dryness, which these lumps of porous material equally prevent, is fully as much or even more injurious. A cool, shaded, moist situation is essential for them, but it must at the same time be open as regards a free circulation of air. The plants once planted and established should not be very frequently removed, and the soil also ought not to be disturbed more than is absolutely necessary. The surface of the soil after planting may be covered with pebbles, or pieces of freestone, or both intermixed; this, by tending to consolidate the soil, will preserve the roots more securely from any alternations of moisture, and the stones will attract and tend to convey it insensibly to the soil. In order to avoid the heat which such an arrangement would produce about the plant in summer, the whole surface might at that season be covered with compact tufts of green moss, which will greatly assist in keeping the whole cool and moist. When thus fully established in an open but somewhat shaded situation, in a locality which is found to suit them, nothing will be more beautiful during the spring months than the abundant pure white lily-of-the-valley-like flowers that will be produced.

In some situations, where the air is peculiarly heavy and inappropriate for the growth of such delicate plants, we have seen them grown pretty well by placing over them a common hand-light, which is kept on closely during summer and winter. In such a position they are but little affected by the variations to which our climate is subject, and which are most trying to plants of this nature. From the small size which they attain, even when arrived at their ultimate size, and from the simple elegance and beauty of their blossoms, they seem peculiarly fitted for growing in a Wardian case: a small vase, filled entirely with these two plants, and covered by a bell-glass, would be a very pretty ornament, either for a table in a cool room, or for a shady window; and in a cool case, in company with ferns of a hardy nature, placed in a shady situation, they would no doubt grow very freely.

CASSANDRA.

Cassandra calyculata, D. Don (calyculated Cassandra).—A small evergreen, or somewhat rusty looking shrub, growing two or three feet high, with curved spreading branches, and elliptic-oblong bluntish leaves, rusty beneath; the flowers are white, oblong-cylindrical, thickly placed on the under side of the curving branches (in botanical language —racemes recurved, leafy); it blooms from February to April. A native of North America, also Sweden, Siberia, &c. The following varieties are enumerated:—*angustifolia*, with linear lanceolate leaves, and oblong ovate flowers; *latifolia*, with broad leaves; *nana*, a very dwarf small plant; and *ventricosa*, with the flowers much inflated.

These plants are very ornamental, and require the same kind of treatment as that recommended for Andromeda.

ZENOBIA.

Zenobia speciosa, D. Don (showy-flowered Zenobia).—A handsome evergreen shrub, growing two or three feet high; the leaves are oval, obtuse, crenated; the flowers white, bell-shaped, disposed in numerous short drooping racemes along the branches, and blooming in June. A native of swamps in North Carolina. There is a variety called *nitida*, with oblong ovate serrated leaves; another, *pulverulenta* (also called *Andromeda cassinæfolia*, *speciosa*, *glauca*, *dealbata*, and *ovata*), with roundish ovate crenated leaves, covered with white powder; and *spicata*, with spiked flowers; all these have white blossoms.

The Zenobias are handsome plants, with good foliage, and require the same treatment as recommended for Andromeda.

LYONIA.

Lyonia arborea, D. Don (tree Lyonia).—A handsome small tree of twenty feet high and upwards; the leaves are deciduous, oblong-acuminate, serrated, and shining; the flowers are white, ovoid-cylindrical, in terminal panicles, produced in June and July. A native of the valleys of the Alleghany Mountains in North America. The leaves have a pleasant acid taste, and are frequently used by hunters in the mountains to alleviate thirst: it has been called the Sorrel tree. In a wild state it grows from forty to sixty feet high.

Lyonia capreæfolia, Watson (goat-willow-leaved Lyonia).—A deciduous small shrub, with coriaceous elliptic, serrulated leaves, and white globular flowers, disposed in racemes and in corymbs. It is a native of North America; it flowers in July.

Lyonia ferruginea, Nuttal (rusty-looking Lyonia).—An evergreen shrub, from three to five feet high, with obovate, coriaceous, brownish looking leaves, and small white globose flowers, three or five together, from the axils of the leaves. It flowers in June and July. A native of Georgia, Florida, and Mexico.

Lyonia frondosa, Nuttal (branched Lyonia). —A deciduous shrub, growing about three feet high; the leaves are oblong or oblong-ovate; the flowers white, globose, downy, in a terminal leafy panicle. It flowers in May and June. A native of Virginia and Carolina.

Lyonia marginata, D. Don (marginated-leaved Lyonia).—A small straggling evergreen shrub of two feet high, with oval-acuminate coriaceous leaves; the flowers are cylindrical, pale red, blooming in June and July. A native of sandy forests in Carolina and Florida. A variety called *rubra*, has flowers of a deeper red. It is also called *Andromeda coriacea*, and *A. lucida*; and by some *A. mariana*.

Lyonia mariana, D. Don (Maryland Lyonia).—A deciduous shrub, growing two feet and upwards, with oval acute leaves, and large ovate-cylindrical flowers, white tinged with red; they bloom from May to August. A native of woods and dry swamps in North America. A variety called *oblonga* has oblong leaves; another, named *ovalis*, has oval leaves.

Lyonia multiflora, Watson (many-flowered Lyonia).—A deciduous shrub, growing two feet high; the leaves are narrow lanceolate, and serrated; the flowers small, white, globose, disposed in terminal panicles composed of numerous grouped racemes. It flowers in July. A native of North America.

Lyonia paniculata, Nuttal (panicled-flowered Lyonia).—A deciduous shrub of three or four feet high, with obovate-lanceolate leaves, and small downy white globose flowers, in terminal panicled racemes; it flowers in June and July. A native of swamps and woods in North America.

Lyonia racemosa, D. Don (racemose-flowered Lyonia).—A deciduous shrub of three or four feet high; the leaves are oval-lanceolate, serrulate; the flowers are cylindrical, white, in terminal, one-sided spikes, having a very ornamental appearance; it flowers in June and July. A native of bogs and swamps in North America. The flowers have a fine odour. There are two varieties:—*latifolia* and *stricta*.

Lyonia rigida, Nuttal (rigid-leaved Lyonia).—An evergreen shrub, with cuneate-lanceolate coriaceous leaves; the flowers are globose, white, from the axils of the leaves; it flowers in April and May. A native of North America.

Lyonia salicifolia, Watson (willow-leaved Lyonia).—A deciduous shrub allied to *L. paniculata*, and like it possessing considerable beauty; the leaves are lanceolate-acuminate, shining; the flowers are greenish-white globular, in compound terminal racemes: it flowers in June and July. A native of the Mauritius.

The Lyonias require similar treatment to that which will be detailed under the next head.

LEUCOTHÖE.

Leucothöe acuminata, G. Don (acuminate-leaved Leucothöe).—An evergreen shrub of two to three feet high, with ovate-lanceolate shining coriaceous leaves; the flowers are cylindrically ovate, white, in short drooping axillary racemes; they are very freely produced in July and August. A native of sandy swamps, in Georgia and Florida. It is variously named:—*Andromeda formosissima; A. laurina; A. reticulata; A. populifolia;* and *A. lucida;* and is called "pipe stem-wood" by the Americans, from the circumstance of the stems being hollow, and used by them as pipe stems.

Leucothöe axillaris, D. Don (axillary-racemed Leucothöe).—An evergreen shrub of two to three feet high, with oblong or oval, acuminate, serrulated leaves; the flowers are white, ovate-cylindrical, in short axillary racemes; it blooms in May and June. A native of the mountains of North America. There is a variety with very long linear-lanceolate leaves.

Leucothöe floribunda, D. Don (numerous-flowered Leucothöe).—An extremely beautiful evergreen shrub, growing two or three feet high, and very bushy; the leaves are coriaceous, ovate-acute, finely serrulated; the flowers are white, ovate, disposed in several close one-sided spikes at the ends of the branches, forming a terminal forked panicle; it blooms in May and June. A native of the mountains of Georgia. This plant is rare, and generally esteemed difficult of cultivation.

Leucothöe spicata, G. Don (spicate-racemed Leucothöe).—A glabrous evergreen shrub of two feet high, with elliptic-lanceolate, serrated leaves, and long one-sided spikes of cylindrical-ovate white flowers; produced in June. A native of North America.

Leucothöe spinulosa, G. Don (spinulous-leaved Leucothöe).—An evergreen shining low shrub, with coriaceous ovate-oblong, serrulated leaves, and white ovate-cylindrical flowers, in one-sided axillary racemes; it blooms in May and June. A native of Lower Carolina. It is also known as *Andromeda Catesbæi*, and is a very beautiful species.

L. floribunda, which is one of the most beautiful, is also generally considered one of the most difficult species to cultivate. The following details refer specially to it, but the same system of cultivation will be found suitable for the whole family of Andromedæ.

This species of Leucothöe pre-eminently delights in the cool moist situation which has already been alluded to. It is very impatient of heat and a dry atmosphere; when planted, as it has sometimes been seen, in a border on the south side of a brick wall—a situation usually afforded to rare and delicate plants, and where, therefore, this would be very likely to be placed—it soon gets into a very unhealthy state, and eventually languishes and perishes. It is also impatient of being kept in a pot, though it may be taken up and placed in pots for forcing one season without much injury being sustained; in this case it requires planting out again, after flowering. But when retained during the summer in pots, it always suffers, more or less; and no treatment appears so prejudicial to its health as to be potted and placed in a dry and hot situation, exposed to the rays of the sun, or within the influence of reflected heat. In thus alluding to its inadaptation to pot culture, it is not assumed that it cannot be well grown in pots, for the skill and energy of British gardeners would accomplish even greater deeds than this, but in ordinary cases, and under ordinary treatment, it does not succeed when so grown. In fact, its proper position is out-of-doors, as a hardy shrub; and there through the winter and early spring its pearly flowers and dark green foliage are very beautiful.

To secure the condition of coolness and moisture in the soil, so desirable in cultivating these plants, and not always naturally existing, at least when the necessary drainage to prevent stagnant moisture has been attended to, the following practice has been adopted with success:—Beneath the soil forming the beds in which they are grown, is formed an impervious layer of stiff or clayey soil, hollowed out like a dish; this should slightly slope to one point, where there should be egress for the water when necessary; the bottom of this bed is then laid with six or eight inches of open material, among which water may be absorbed in passing downwards after watering the surface, or when poured beneath the soil, at places formed on purpose; the object is, in dry weather in summer to keep this open material thoroughly moist, and this keeps the roots cool; moisture may be retained for any length of time in the bottom of the bed, by stopping up the point of egress, which may be made in the form of a simple sluice. In winter or in wet weather at any period of the year, when the artificially induced moisture was not required, the point of egress might be free for the passage away of the water from the bed, which in this case would not differ from an ordinary bed of earth. The thickness of the peat soil for the roots may be from fifteen to eighteen inches. In this, the plants will be found to grow freely enough in an open and exposed situation, without requiring shelter of any kind.

It may be well to mention, that where a number of these plants are seen growing together, an occasional branch or two may be seen gradually drying up and eventually perishing; this is found to have been caused by some injury sustained by the bark during the process of hoeing or weeding the ground, by some careless hand. The injury of the bark therefore from this or any other means, ought to be carefully avoided.

It is propagated readily by layers, which take two seasons to root. They are best put down in the month of April, because the spring is the best time to remove them when rooted, and they ought to be taken off and transplanted as early as they are ready to be detached, for if allowed to remain they grow rapidly and become crowded, which is injurious to that bushy and well furnished habit so much to be desired in the young plants.

In planting, both in the case of these and other groups of Andromeda, it has too often happened that they are planted much too closely together, by which their natural habits and characters are totally lost, and their blooming greatly hindered; they ought in all cases to be placed so as to grow quite apart from, and independently of, each other.

Allusion has been made to forcing this shrub. Its flowers are formed along with the young shoots during summer, and even out of doors continue to advance slowly all through the winter up to the time of flowering in the spring; their maturity may be accelerated by taking up the plants carefully in the early part of October, and potting them in pots suitable to their size, and in peat soil; they should then be placed in a situation where they will be protected not only from wet but from extreme cold—not that they require protection from severe weather, for they are perfectly hardy, but the protection thus afforded to them is the first advance in the progressive increase of temperature, by which alone perfect success in forcing hardy plants into bloom is to be realized. When submitted to this moderately increasing temperature they will be in flower in a month or six weeks, according to the particular period of the winter, and the presence or absence of sun. When in bloom they can be taken to the drawing room, or conservatory. After the blooms are faded, they must be again sheltered by a frame till about the month of April, when they should be planted out, and other plants must be selected at the proper season for forcing the following year. In planting out, the tips of the fibrous roots should be carefully disengaged from the balls of earth, and laid out on the soil. Some plants of this shrub in the garden of the Royal Botanic Society in the Regent's Park, which were taken off as rooted layers in the spring of 1837, were in 1844 about three feet high, and thirteen feet in circumference, closely and evenly furnished with branches, and with flowers in the blooming season, and at that period resembling a huge mass of pearls thickly studded over the dark green leaves.

The remarks here given on the treatment of this plant will apply equally to the Lyonias; and also more or less to the Cassandras, Zenobias, and Andromedas. The species enumerated in this paper may be considered as Andromedas, or the name we have given may be adopted if preferred.

In the case of most of the species here referred to, the flowers are of a delicate waxy texture, and admirably adapted for bouquets.

NOTES ON FLORISTS' FLOWERS.

BY GEORGE GLENNY.

The present season has not been very prolific in the way of novelties. A few specimens of flowers exhibited up to this time at the Metropolitan Shows may be worth notice, and only a few. *Tulips* afford but little, nor is there any subject that requires an elaborate notice. Two tulips that were let out last year are deserving mention—The Queen of the North, by Mr. Hepworth, and Bijou, by Mr. Dickson,—the former was described by us while it was a seedling in the first holder's hands. It is a compact but unwilling opener, with rather a long cup, very close, splendid white ground pure as snow, a dark feathering, generally well marked, but this is not likely at such a season as the present; nevertheless, we have seen it perfect; the feathering not the eighth of an inch down, the white as pure as snow, and scarcely a break all round the feather. It is decidedly an acquisition in a fine bed, and the sooner it is general the better. Bijou is a very striking rose, let out by John Dickson last autumn, and worthy of a place in any collection, however fine. It is very distinct, between the colour of Triumph Royal and that of Princess Sophia of Gloucester, or Madame Vestris. It is quite distinct enough to put into a stand with any rose extant, and we consider it a great acquisition. This year Cooper's flowers have been distributed, and among them were four or five of his own raising or breaking. His President is a Bizarre, stands in good condition in his outbed, but heavy in the general way: it is remarkably clean. His King of Oude, about which some florists said a good deal as a middle row flower, in the inside is worse than we know how to describe. It must be grown in the middle of a six feet wide clump, so that nobody can ever see the inside. Cooper's rose Fanny has been so heavy in colour as to be unfit to judge. All that we can say of it is, that it is clean, and when in good marking must be a pretty flower. Louis Philippe is a clear Byblomen, not a bad shape, but it rather hugs like Belle Ceres, and Maid of Athens, or Thalia. The tulip sales this year have exhibited something like a fall in prices, chiefly, however, through the want of money, and not a lack of buyers: the most showy and expensive of the season being Dickson's Duke of Devonshire, Pompe funèbre, Lac, Bysantium, Strong's King, Jeffrey's Elizabeth, and one or two others; but money has been considered, in comparison with all articles of luxury, to be twice as valuable as it was last year, consequently nobody would part with so much of it. *Auriculas* have not produced any great things. Mr. Dickson has exhibited a new one, which seemed to be a favourite, and one or two country flowers have exhibited some marks of promise, but nothing distinct enough to pronounce good has been seen this season. Geraniums have certainly made no decided advance in the first three or four shows that they have appeared at. Ordinary colours, and not better than recent ordinary forms, have abounded without any striking feature. Some three or four half-bloomed things have been seen, and they may, at future shows, redeem their character, or rather assume their character. Some of them appeared to have been placed in head to force out a flower, and we need not say that such flowers were not in their proper character. In *Pansys*, Mr. Turner has shown one of some promise. Mr. Bragg has produced a bright lively looking yellow ground flower, which he has named Mrs. Bragg. Mr. Hunt, of Bucks, has shown a flower called the Honourable Mr. Grey, which was in bad condition, but had a magnificent bottom petal, almost the best we ever saw; whether some ugly folds in the upper petals will come out or not, we have yet to see; the upper part of the flower is not equal to the bottom. *Cinerarias* have made a decided advance. Mr. Ivery is proving some that we fully expect to be able to recommend strongly for their excellent properties in another month. They show a disposition to lose the notch, and to close up in a very good circle. The colours, too, of several are very desirable, and, upon the whole, we think there will be six or eight fit to add to any collection. *Petunias* are in request. Girling's Madame Celeste, Miss Ellen Chaplin, and a third that we do not know the name of, are great acquisitions. Lucy Neal, however, is the very best we have seen, and we would strongly recommend everybody who has not got it to procure it: we consider it the best form of any, if not the best in one or two other points.

The Royal Botanic Society has been liberal with prizes for florists' flowers, and it has had the best effect, because they form the most attractive features in a show. We shall be able to give a few names and descriptions of geraniums next month; but hitherto we have seen nothing to warrant any very great notice; the truth is, some of Mr. Beck's flowers are so fairly a-head, that seedlings, which might have been stars once, are eclipsed now, and so it is with some other flowers of scarcely less importance.—G.G.

IMPROVEMENT IN WATERING CANS.

MR. SAUL, of Garstang, has suggested an improvement in the construction of the common garden watering can, which consists in fixing a plate pierced with holes inside the can at the lower end of the spout, by which means any matters which may be contained in the water are prevented from entering the spout, and obstructing the discharge of the water through the rose fixed at the upper end. This is often a source of great annoyance in the operation of watering when the rose is made use of, the roses being constantly liable to become choked or stopped up by extraneous matters which may get into the water. Watering cans of this construction would also be suitable for applying liquid manure. The addition is very easily made, and is, of course, effectual in preventing the inconvenience in question. Of course, in the case of watering cans that are constantly used without the rose on the spout, the addition is not required.

GLENNY ON THE FUCHSIA,

ITS CULTURE AND PROPERTIES.

The Fuchsia has become one of the most popular of the florists' plants. The publication of the properties which constitute perfection was the signal for a general improvement; and notwithstanding the thousands of weedy worthless things that have been turned out without merit to sustain them a season, there has been a general appreciation of the better subjects, so that it is now possible to obtain a dozen or more varieties which are manifest approaches to the desirable standard. The Fuchsia, more than any other subject, derives much of its value from the habit of the plant. Many of the varieties have flowers worthy of notice, but the uncouth growth of the shrub itself destroys its beauty; while some of the most handsome of the plants have ugly flowers. There is much to be done in cultivation to aid their appearance, and care should always be taken to shape the specimen under culture in such a way as to show off the habit to advantage: for instance, if the flowers or the footstalks of the flowers be very long, the plant must be grown sufficiently open to allow the bloom to hang free of the branches, and in some instances they would be better as standards. In the cultivation, therefore, of the plant this must be well studied. The various modes of growing the Fuchsia consist of retarding the open lanky varieties, exciting the short-jointed bushy kinds, thinning out those which have the branches confused, and shortening the branches of all inclined to grow too long; and these operations are simple enough when once it is understood what the plant requires.

FUCHSIA FULGENS AND CORYMBIFLORA.

The varieties of this kind—and they are many—are curious in habit as well as in flower. The bloom comes in bunches almost like tassels at the ends of the branches; the choice therefore may be made as to forming a bush or a standard tree, for they do for either.

To form the Standard.—The strongest shoot that comes from the root in spring must be allowed to grow, and all others must be cut off as they appear, so that the plant must be confined to one stem. The plant should always be repotted as soon as it begins to grow, giving a good inch of new soil all round the old ball; even if the plant be young and in a two-and-a-half-inch pot, it ought to be placed in a four-and-a-half-inch sized one. As it advances in height the lower side shoots should be taken off, but three or four pair should be always kept on; and as the upper ones advance the lower ones can be taken away, so long as it grows the height the stem is required to be. When the stem has grown as high as it is required, and you wish to form the head, pinch out the top, and it will accelerate the growth of the side branches required for it; and the end must be pinched out of the side shoots, that they may throw out laterals, and such of these as are wanted may be allowed to grow, while those which cross each other, or cause any confusion, may be removed altogether. The stem must be kept clear by rubbing off all the little shoots that appear as soon as they come; and as a general rule from the beginning, change the pots to larger ones as soon as the roots begin to mat round the side, which will be guessed at pretty well: before a change is made, the ball of earth of each plant must be examined, and if the roots have not matted a little, it may be continued some time longer. The formation of the head must be well attended to, and when there appears to be branches enough, they must be no longer stopped, but allowed to continue growing up to the bloom, which, coming as it does at all the ends of the somewhat pendent branches and shoots, hangs down in rich clusters, and has a very pretty appearance.

To form the Shrub.—The plant should be, as in the former case, confined to one shoot, and all the others should be removed. Observe the same plan in potting, but remove none of the lateral branches as the plant advances, because in this case you want the plant to be feathered down to the pot, or nearly so. If any one of the side branches appears more vigorous than the rest, stop it; but as the plant naturally grows bushy, the chief object is to regulate the branches, and to cut them away when they come too thick. When the plant is nearly as tall as you want it, pinch the ends out of every branch, and if necessary shorten them two or three joints; you then depend on all the laterals for growth and bloom, and you will have a bushy handsome shrub, with bunches of flowers, much more numerous than they would be without the stopping, but not so large as if you allowed the original branches to flower.

THE GLOBOSA AND SHRUBBY KINDS.

These will in general grow handsome, but there are more woody than the varieties we have been treating of. They will grow from year to year, and retain the old wood, so that a standard once formed may be preserved and grown like a rose; but the plants, when young, must be grown into the form required, and as they bloom all along the branches, they must never be allowed to grow too thick. Many of the varieties disposed like the globosa to be pendulous and very bushy, require nothing but growing, and the occasional removal of branches growing in the way of each other; and this must be well attended to, for half the beauty of the plant is destroyed when they are allowed to grow at random. There is a peculiarity in some of the varieties—and globosa is among these—which must be taken into account while growing; this peculiarity is the habit of blooming even the instant they are struck. Mr. Dennis, of the King's-road, used to exhibit plants by scores in full bloom, hanging over all round the pot, and not two inches high, and very beautiful looking objects they were; when this is required we have only to select the cuttings from the ends of branches, at the fall of the year, strike them in heat, and pot them as soon as they have struck in small sixties, or pots of two and a half inches across, in soil composed of loam from rotted turf, two parts, and cow dung decomposed to mould, one part: let this be sifted with a sieve that would let horse beans through, merely to take away larger stones, which are in the way in small pots, though not in large ones. In these pots let them grow all the winter, instead of resting, but pinch out the tops as soon as they start, and in spring they will be handsome little plants in full flower. But plants that are to be grown to any size as specimens must be put into a moderate degree of warmth, and even a little bottom heat is good for them: they must not be topped, but as soon as the roots reach the side they must be shifted to larger pots, and the instant the buds appear they must be picked off; but, generally speaking, all the plants of this short pendulous bushy habit may be allowed to grow and bloom and grow again, merely shifting them as they require it to larger sized pots, and resting during the winter months in a cold pit or greenhouse.

THE TALL GROWING KINDS.

If any thing ever showed the folly of the one shift system its application to Fuchsias was that one thing. In the varieties, like Venus Victrix, and many more, rapid growth is detrimental to beauty. They should be grown in the loam from rotted turf only; they require no excitement; the cuttings when struck should be potted as directed for the globosa, the change of soil only excepted; the cutting should be topped, so as to leave only two joints above the soil, and one of these should be close down to the compost. As the laterals grow, pinch the tops off, and this will induce other laterals from the first shoots; by avoiding dung in the compost, and not giving much room in the pots, and allowing but a limited supply of water, these plants will grow shorter jointed; and by continual watchfulness and stopping all the shoots at the third joints, and merely removing altogether such shoots as are in the way, fine bushy growth can be maintained, even in the most ugly kinds. When the plant has grown enough to promise a handsome finishing growth, let the shoots all grow but such as are in the way of each other; and though it may not be half so large a plant as might be grown under other management, it will be found uniformly more beautiful. It may be allowed to go on to flower, and will repay well for the additional trouble.

In a general way the Fuchsia luxuriates in rich soil, but nineteen of every twenty plants that are exhibited are thoroughly spoiled by the rank growth. The great straggling specimens that have been shown as examples of one season's growth have been enough to disgust a man of taste; for rapid growth is always against appearances, and the very feature which is shown as a specimen of skill in culture is evidence of a total misconception of what the plant ought to be, and of a coarse or vitiated taste that has done much to retard floriculture—a vulgar notion that size is a quality to be appreciated before beauty. There is nothing more easy than to grow a fuchsia of a large size. It may, for the sake of occupying less room, be potted from a cutting to a two and a half inch pot, and placed in a moderate stove or warm greenhouse, so as to get a gentle bottom heat; a common cucumber bed that is declining would do for some time. The instant the roots of the plant reach the side of the pot, shift it into a larger sized one, and repeat the treatment: as it will grow rapidly, change it to a pot a size larger the instant the roots reach the side, and continue its growth. Should it show bloom before its time, pick every bud off as soon as it appears; but by continuing the rapid growth the flower very seldom troubles us. In this way the advantage over the one shift system—which means planting the cutting at once into the largest sized pot—is, that the plants do not occupy so much room until they have attained their maturity: but the roots must not be allowed to matt against the side; the shift must take place as soon as the roots reach, and before it makes any growth upon the surface of the pot; for all that can be done for a plant wanted to grow rapidly is to see that it has no check by reason of a want of nourishing material for it to grow in. In addition to this some use liquid manure; but when the pot is changed before the roots matt together, and the compost is rich, there is no need of any thing more exciting. The plants so grown will, however, only be like those shown so ugly at the principal shows; there will be nothing elegant about them; the joints will be further apart, consequently the foliage will be poorer, and the plants much more straggling than they ought to be.

STRIKING CUTTINGS.

There is not a weed that strikes more freely than the fuchsia. It has been the custom to cut up the pieces, so as to have a joint at the bottom, and one above the surface, and in this way they may be struck by thousands under a common hand-glass in a shady border; but as a rule without an exception, slight bottom heat will always hasten the striking of cuttings, no matter what they are; and, perhaps, if there are many thousand cuttings to strike, it would be worth making a slight hot-bed in a shady corner, or where there is a facility for shading, and to put about three inches of good sandy compost upon it; then with hand-glasses mark the spaces to be occupied; into these spaces place the cuttings very thick, and cover with the glass after watering. This may be done in the spring or fall of the year. The glasses must be frequently lifted to give air, but never left off, unless it were in case of a warm evening or morning, when there is a gentle shower. In ordinary collections a few cuttings may be placed in a pot under a bell glass, and put into a frame or in the greenhouse, and they will strike like so much couch grass: in short, so that the cuttings are placed in some sort of compost, watered in, and shaded, it would be difficult to prevent them from striking.

SAVING SEED.

The Fuchsia seeds freely enough when in good health and brought into bloom early; but the desire to grow new varieties may induce the cultivator to fertilize them artificially, instead of allowing them to take their chance. There is no flower more easily fertilized, because the pistil is very much exposed, and the pollen is easily got at. Select for seed-bearing, plants of good habit, and with flowers which have some good properties; those which are to supply the pollen may be selected for some particular quality, as colour, shape, or whatever else may be wanting to make the others better. When Fuchsia fulgens first got about, everybody was seeding from it, and those who pretended to cross or fertilize at all used the smaller varieties for the purpose: the result was, that almost all the novelties were of the coarse ugly habit of fulgens, and the flower in general worse instead of better than the parent. We advised in early days to save seed from the globosa varieties fertilized with the pollen of the fulgens, if large flowers were wished for. In all cases, as the parent or seed-bearing plant is sure to predominate, so far as habit goes, in all the seedlings, it should be invariably a handsome growing variety. Having selected the plant to seed from, take the pollen from any one whose colour or texture you wish to impart, and with this pollen cover the pistil as soon as it becomes glutinous, and before its own pollen falls upon it: tie a piece of matting or other slight thing to mark the flower you have fertilized, and remove all the other flowers and buds of flowers directly you observe the pod swells; this will hasten the growth and perfecting of the seed. When the pod has ripened it will be soft and full of pulp, which holds the seed, and this may be kept until it begins to shrivel or turn mouldy, when the seed should be taken from the pulp, and carefully dried before it is put away.

RAISING THE SEEDLINGS.

In a wide-mouthed pot—which is preferable to a seed pan, on account of the body of mould to retain the necessary moisture—sow the seed very thinly in compost of nearly all rotted turfs, with a little sand, if necessary, to lighten it; sift a little of this through a fine sieve to cover the seeds, and place it in the greenhouse under a hand-glass. Any time from January to May will do, but the sooner the better. As soon as the seed begins to vegetate, it may be taken into the propagating house or a warm part of the greenhouse; and when the plants are large enough to handle, prick them out an inch apart in wide-mouthed pots, and let them be covered with a glass for a few days until they fairly establish themselves. They may now be placed in the greenhouse without covering, and be allowed to grow until they nearly touch each other, and may then be potted in sixty-sized pots, one in each, and if you have frame room out of doors, they should be placed on a hard bottom and be covered with the glasses at night, and in foul weather; here they may remain, watered at proper seasons, and having all the air that can be given, until the roots fill the pots, when they may be all shifted into five-inch pots, and stood out of doors altogether. Great care must be taken that they are regularly watered, and that they stand on a hard bottom, that they may not strike their roots through the pots into the ground, for that creates an excited growth, and the plants suffer when removed. The great object in growing seedlings without attempting to top them or stop the branches, is that we may see their natural growth, for there is as much value in habit as in flower; and a bad habit with a fine bloom should only be tolerated until as good a flower can be got on a fine habit. As the winter approaches, the pots should be removed into a cold frame, and with a hard bottom; they do not require heat, but they must be covered from frost; they will in all probability lose their leaves, and they should not be watered—not that they will do without some moisture, but while there is any, they ought not to be watered more than just to keep them alive. Towards the spring they will indicate growth by the swelling of the buds; the balls may be turned out and examined, and if the pots are full of roots, change them all for thirty-two-sized pots; give them only the loam of rotted turfs; if this cannot be had, and you have only plain loam, add one part of leaf mould to every two parts of the loam; and if the loam be rather poor than otherwise, make three parts loam, one part leaf mould, and one part cow dung, or dung from a melon bed rotted into mould. In these pots they may be set to grow in a greenhouse, for when they begin to grow they would be very easily damaged by a slight frost, that is to say, the young growth would be cut off, so that the growth afterwards would not be natural; the effect would be the same as topping all the ends, which, however desirable in some plants, cannot be so with seedlings, which you require to exhibit their natural growth. As they bloom, throw away or give away all that are not improvements on what we have already, or sufficiently novel and good to be worth cultivation; no self ought to be retained unless it be very remarkable; no coarse large sorts should be kept unless the corolla be very distinct, and the plant of very fine habit. Many may be tolerated for their colour, some for their contrast, but none would in these days be considered at all fine unless they showed the inside of the sepal, which is always the best surface, and all the corolla, which is the great ornament of the flower. Early in June they may be placed in the open air, and have all the sun and rain, but as the roots next the side of the pot are soon scorched unless the plants are liberally watered, nothing is more necessary than attention to that point. The object of growing them out of doors is to get them of their natural colour; house culture will often blanch the sepals that would otherwise be red, or foxy; and it is quite necessary to see what they would be without this blanching. Such as are worth taking care of may be removed into the greenhouse or conservatory; and may, if increase be desired, be propagated immediately by cuttings, as we have already directed.

FLOWERING THE FUCHSIA.

Here proper regard must be paid to the habit. If the blooms are scanty along the branch, but very thick at the ends or towards the ends, the buds should be thinned out, so as not to touch each other or be crowded. The thinning of the flowers will make those which are left finer, and come to perfection more evenly; nothing is more common than to see the buds which are left clustering towards the end remain green, while those near the bottom bloom and decay. It is a decided fault if the flowers do not come out pretty nearly together.

FUCHSIAS IN BEDS OR BORDERS.

In planting beds or borders there is room for a little taste. The outer row should be very dwarf; those next to them inwards should be taller, and of another colour if possible; and the further they get from the edge, the taller should the natural height of the variety be. When bedded out they ought all to be small, well established in pots, but not grown much. The tallest growing sorts should be at the back of a border, or in the centre if it be in a bed. There are some that will run up conical and several feet high; and regard must always be had to the height they attain.

GENERAL REMARKS.

The Fuchsia is a very sporting flower, but like many others there is a great sameness in a batch of seedlings; and it is not enough to pick out those which differ but little from our present varieties, or from each other, for that has been the great evil. Many hundreds that have been catalogued are positively worthless, and were so from the first. It must be a very remarkable one that is worth saving now, without it reflexes; the difference between one which does and one which does not reflex, may be seen from our engravings. The one shows the outside of the petals, which is almost invariably coarser and duller than the inside, besides which it covers instead of exposes the corolla, which is the chief beauty; and unless the sepals and the corolla are of decidedly different colours, so as to form a contrast, they are scarcely worth keeping.

MONTHLY TREATMENT.

January.—All the plants are now resting, and must have no water; they may be placed on the ground in the greenhouse, or be in cold frames and pits. A little seed may be sown this month or next.

February.—The plants now indicate growth by the swelling of the eyes, and in some instances the actual bursting of them; they should, therefore, be pruned, repotted, and set to work. In pruning plants which have grown to any size, regard must be had to the shape you wish the plants to assume; all the weak spindly twigs must be removed, for they can be of no use, but, on the contrary, they would make a confusion: generally all weak ends should be taken off and shortened to the stronger wood. Seed may be sown this month. Seedlings of last year should not be pruned at all, however ugly they may be.

March.—Towards the end of this month the plants should be turned out, and the balls examined to see if the roots are beginning to matt next the pot: if they be, there should be another change to a larger sized pot: if they have not begun to matt round the side of the pot, they may remain till they do. Any of the branches that are growing out of the form you wish, may be shortened; branches growing across each other, must be altered by shortening one, or taking it away altogether. Seed sown in February and March must be kept moist, and covered with glass, independently of being in a greenhouse or pit. The prunings of the plants may be used as cuttings, if wanted.

April.—The plants now grow fast, and must be attended to, according to the shape they are to grow. Of the necessary training and pruning enough has been said, but you cannot carry out the directions too strictly. If the plant seems sufficiently well-shaped, and indicates a graceful growth, it may go on, but if it be not full enough, the shoots must be all topped, or at least such of them as are in places where the plant or the head of the plant wants to be thickened. Seeds that are well up, and the plants large enough to handle, must be pricked out an inch apart from each other, in pots of any size, because the number in each will depend on this only. The best way to prick them out is, to begin round the edge with the first circle, the plants touching the pot; a circle one inch within should be next filled; and then another circle within the second, and so on till the pot is filled. Examine the growing plants, to see if they require larger pots: watering must be well attended to.

May.—The treatment should be the same as last month, in almost every respect. While growing, the plants want great attention as to watering, and giving them plenty of air, for they will otherwise draw up weakly. If they could in cloudy weather be quite open to the air, so much the better. The seedlings must be watered, and may be supplied with as much air as possible; they should be as near the glass as you can put them.

June.—In this month many plants will begin to flower, and in a collection they may be better to come at different times, than all at once. If you intend them for late show, they must be kept cool and very airy, and completely shaded from the sun; but the material must be light, for if they are darkened, they cannot bloom so finely, and the foliage is apt to turn pale. Such as are not showing bloom buds, or, if showing, are required to bloom soon, may be continued with all the benefit of the sun, and in the natural warmth of the house. Seedlings will be growing fast, and the balls may be examined towards the end of the month, to see if the roots are too thick in the pots; if they should be, the plants may be removed into small sized sixty-pots, say those of 2½ to 3 inches across the top, one in each pot; they may be well watered to settle the earth about the roots, and replaced until they are established, after which they may be set out of doors, and allowed to receive all the weather; but the bottom on which they stand must be hard, and not retain wet, nor admit roots. Pay great attention to the watering in the house, in the pits, and the open air,—but especially the open air, because the sun has great power, and soon dries up the moisture of small pots. You must be guided by the state of the soil, and not merely do it periodically. Thin the bloom buds where they are too thick, for the flowers should never crowd. Look to the seedlings of last year, and save only such as show good properties.

July.—The season of blooming having fairly set in, all that can be done for the appearance of the plants should be done, such as taking off any branches that appear superfluous, and increasing the size of the pots if necessary, but this must be done carefully if at all. The seedlings may, by the end of the month, have filled their pots with roots, and if so, they must be changed from the sixty-size to the forty-eight size; and if this be well done, they will only require watering to settle the new earth about the balls that are already surrounded with roots. To do this, the ball should be turned out by gently tapping the edge of the pot against the table or potting bench, holding the plant wrong side upwards, with a finger on each side to prevent it falling down; the new pot should have a bit of sponge at the bottom, or some crocks or moss by way of drainage, and then a little soil; then place the ball of earth on it, and press it till the surface of it is about as high in the pot as it ought to be. The compost should then be put round and pressed gently down till the space is filled; they must then be watered gently to settle the earth, and be placed out again on the hard ground to grow as they will. Examine the seedlings of last year as they bloom, and throw away all that exhibit no novelty or valuable property; and unless a flower be first-rate, do not save a badly habited plant. Strike cuttings, if wanted.

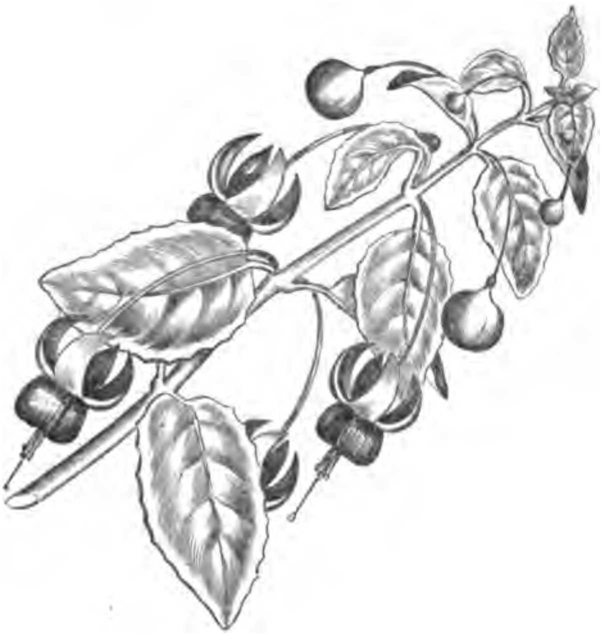
August.—The plants, all in full bloom as much as they will be, only require regulating, and the flowers thinning, so that too many be not left on the same branch, and that they hang not in each other's way. Subject to the different plans of growing the different varieties, the plants must be managed according to their habits. The seedlings are still to be attended to, out of doors, so that their natural growth shall be seen. It is of the highest importance that they should be allowed to grow as they are inclined, without topping or stopping, or checking in any way, that their true natural habit may be seen; care must be taken that they do not root through the pots into the ground they stand on, and the moisture must be attended to more particularly than in the large collection, for they are more exposed. Fertilize the principal sorts with the pollen of such as may be thought likely to give an improved change, and tie the pods so fertilized. Examine the seedlings of last year as they open, and select only those which are really novel and beautiful, and of good habit, for keeping. Cuttings may be struck at any time if they are required.

September.—The large plants as they pass their prime, may be placed out of doors, and if seed be not wanted, pick off all the pods inclined to swell, retaining those which may have been fertilized and marked as such. It is necessary that such as have seed to ripen, should be housed again in the greenhouse or pit, or in some way sheltered from frost. Towards the end of the month let all the seedlings be placed in pits which can be covered from frost, as their young growth, and their inclination to continue it longer than the principal plants, render them more susceptible of damage than any other. They require no heat, but they must be well preserved from frost. Cuttings may be taken at this as well as at any other period, when it is at all desirable to increase a variety, but in proportion to its value, so it should be carefully managed; the most valuable may be thus treated:—Let the cuttings contain two joints, one from above the surface to make the plant, and one from below the surface to make the root; let the pots be filled to within an inch of the top with proper soil to grow in; knock the pot on the bench two or three times to settle it down level, then put half an inch of silver sand on the top; stick the cutting into the bottom of the sand, so as to touch the compost, but not to go into it, and let there be room to place a bell-glass so as to let the edge of it into the sand a little way: water them in, cover up, place them on a slight bottom heat, wipe the glasses dry daily, and keep them moist.

OCTOBER.—Those plants which still retain their beauty, may be used in the house, the conservatory, or greenhouse, as long as they are worth a place; but as their beauty declines, they must be prepared for rest by withholding water. The seed pods must be picked off as they ripen, and should be laid exposed to the air in a dry and warm place. Those which have thoroughly gone by, may be placed out of the way anywhere in the houses, so that they do not get moisture by accident: under the shelves of the greenhouse would do, but they should be laid on their sides if there be any danger of drippings of water reaching them. Seedlings must be continued in their pits, or if in greenhouses, must be allowed to grow while they seem inclined, because seedlings differ in their growth and season of rest; while they grow they must have a little moisture, and as much air as can be given in mild weather; they are all the better if the lights are quite open. Take cuttings of all the kinds you wish to propagate, and especially of all the sorts required for bedding out; let them be placed in pots, and covered with bell-glasses: they will strike in the greenhouse, and may be hastened by a little bottom heat, if wanted for early bloom. New sorts may also require great assiduity in striking cuttings.

NOVEMBER.—The management of the present month is like that of the last. In no particular does it differ, unless the plants themselves differ; for instance, as the leaves fall, and the plants decline, they must be deprived of water, and be put at rest. The same is to be observed with the seedlings, for some will show that they have done growing, and may then be brought into the greenhouse, or left in the frame; but there are many dry shelves in the greenhouse, which are better adapted for the young seedling plants than a moist frame after they have done growing: if they remain in the frame, they must have no water after the leaf falls. Covering from frost is essential, for although fuchsias in the open ground frequently stand a moderate winter, the same cold would kill them if their roots were next to the side of a pot instead of underground. Examine the pods of seed, that they do not turn mouldy; on the least appearance of this, it is better to wash them out of their pulp and dry them. See also that the plants which are at rest are not permitted to dry quite, for if the moisture were all out of the mould, they would die. Cuttings that are struck may be potted off to grow, or be allowed to remain nearly at rest, for they will take no harm all the winter.

DECEMBER.—Continue the same management as last month, in all respects, both to seedlings and to the general collection. Prepare the compost for potting and repotting, by getting turfs cut as if for laying down, and piling them up to rot; there is no better compost, although for want of this we are forced to mix leaf mould and decomposed dung, both of which must be provided in case we are driven to use purer and poorer loam. By this time all the plants will be at rest, and require no other care until they are wanted to grow. Cuttings striking or struck, must be examined, and wherever any have damped off, they must be pulled out and removed, to prevent the mildew from spreading. It is a very common thing to take a quantity of cuttings at the fall of the year, and put them in common pots close together, that they may take but little room, and to place them anywhere out of the weather, keeping them just moist enough to prevent their drying, and they generally strike in a few weeks without glassing, after the same manner as China roses are struck during the winter months. But those who have propagating houses and bottom heat at command, do not care to take off cuttings for general use until they prune the plants for their spring growth; and then a few weeks makes a first-rate plant, ready either for bedding out or potting. It is only in case of wishing to propagate for sale, that we are induced to take cuttings at all periods of the year, as the plant can spare them.



There has been much controversy about the proper form of the Fuchsia, but we are not at all inclined to give up the properties we originally laid down. The principal point for which some people contend is the drooping of the points of the sepals; so many thousand more close about their corolla than open fairly out and show it, that the raisers cannot reconcile themselves to throwing away their pets for nothing. The sketch we have now given may be taken to represent one of the best we have. It will be observed that there are several points gained by the present form. In the first place, there is the entire corolla, which is the richest portion of a bloom, exposed. In the second place, there is the better, that is to say, the inner surface of the sepals shown, and the outer side concealed by turning completely up, or reflexing. The brightness of flowers so made is striking as compared with those which scarcely open, and no one would hesitate an instant as to which was the better variety. Many Fuchsias open out enough to show the corolla; Riccartoni and Formosa Elegans open out horizontally; many others are still more reflexed, but most of them have some condemning fault. There are but few which completely hide the dull side of the sepal, and expose the brighter surface, and of those which do, most of them have a tube so long that the reflexing sepals do not conceal it as they would if it were shorter. We have already said, the sepals and corolla must be very much contrasted, and the more the better. White is a contrast with any thing; even a pale rose is pretty if the white sepals be really pure; but violet, pink, crimson, scarlet, or rich purple are still better, because more strikingly different; with a scarlet sepal nothing short of the darkest blue or purple can be tolerable. The mere difference between light red and dark red, like the variety called Mrs. Lane, is worse than a positive self. The new Fuchsia, One-in-the-ring, is very striking as a white with a scarlet corolla. Lady Peel is a striking flower. The Duchess of Sutherland, Ne plus ultra, Miss Prettyman, and some others of that class, rank among the pretty ones. Were it not for the exceeding purity of the white in One-in-the-ring, the length of tube would be a great objection, but the white is good, as it has been shown in public; and if it be necessary to keep it in the shade to produce the white, why we suspect some others would be the same. Millie's Napoleon is white if grown in a shady house, and pinky if grown in the open air or in pits, in which state it is only one of a thousand.

All the varieties we have mentioned are inferior to our present sketch, for the reasons we have named. We like the form of Globosa while in bud, and the form we have given when fully bloomed. We hope in due time we shall be able to impress upon the mind of the raisers the necessity that exists for the consummation of all the properties we have mentioned, before we can call a variety perfect.

There is no form so beautiful as the globe.

There is no degree of opening so perfect as the complete reversal of the sepals to form a globe by reflexing.

There is not two shades of red that can be good, however distant in shade, as compared with those of completely opposite colours, though very light and very dark may be tolerated for want of better.

The habit of a Fuchsia is important. Those which grow rapidly, and become naturally long in the joints, and have the leaves far apart, are objectionable, for they never can be made to form bushy graceful specimens; they may be stopped frequently, and the lateral branches be thus encouraged, which lateral shoots may again be stopped, and by these means something may be done to increase their beauty; but the only way to bring such a habit into any thing like passable appearance, is to grow them in very plain loam, without dung or dressing, and to encourage rather a stunted growth; this will help them greatly, although they will not grow half so fast. Others that are naturally very short and thick can hardly be grown in compost too rich.

The footstalks of the flowers should be long enough to allow the blooms to fall well below the foliage; and there should be flowers at the base of every leaf.

THE PROPERTIES OF THE FUCHSIA.

1. The petals of the inside, or corolla, must be a different colour from the outside, for contrast is essential; those, therefore, which are all of a colour are comparatively worthless.

2. The brighter the scarlet outside, and the deeper the purple inside, the better the flower. The loss of the rich purple is fatal, therefore, to the scarlet Fuchsia. But a Fuchsia may be white outside, and in that case a bright scarlet corolla would be a good contrast, though a purple would be better.

3. The form of the buds or drops before they open cannot be too round, because that form is the most beautiful before opening, and gives the widest sepals when open.

4. The footstalk of the flower should be long enough to let the bloom fall beneath the leaves, and not long enough to let them hang into the branch below them, for the flowers should all hang free of the foliage.

5. The corolla should be large and close, and the sepals should reflex, to expose their inside surface, and to show the corolla out well.

6. The anthers should hang conspicuously below the corolla, and the pistil below them.

7. The flowers of a Fuchsia should come out at the base of every leaf all over the plant, and we have many which do so.

THE MORAL INFLUENCE OF GARDENING.

If there were any doubt as to the influence of gardening on the minds and general habits of the working classes, the simple fact, that the clergy of all denominations are foremost in the ranks of its patrons and promoters, should convince us of its beneficial tendency; but a transitory glance at the inmates of a cottage where the garden is neatly cultivated, is enough to show that the concomitants of industry—comfort and prudence—reign over the affairs of the place. In a work, which we hardly recollect the subject of, there was almost a sermon comprised in a single sentence. It is strongly impressed on our memory, and is pertinent to the matter here. The author says:—"Gardening is the most rational of all recreations. It teaches forethought, industry, and economy of time. It exerts the mind, invigorates the frame, and constantly reminds us of the great God whose hand is imprinted on every leaf, and who, in his bountiful goodness, rewards us with the fruits of the earth. To teach the cottager to manage his garden, is to lead him to happiness. To induce the higher classes to love flowers, is to find them innocent gratification, and provide employment for thousands." There is truth in every word of this. "Gardening is the most rational of all recreations." It is healthful, and every hour expended in it as an occupation is rewarded by the effect of it on the crops. The industry bestowed on a garden is always profitable, and the profit sweetens labour. It is a sorry thing to contemplate the hours that are wasted by the labouring classes in those places where there are no gardens, and it is scarcely to be helped. What is a man to do when he leaves his work? It is not to be supposed that he can sit down quietly for hours; yet what can he occupy his mind with? He may while away some of the time with reading; but reading, notwithstanding cheap literature, is expensive. He seeks in society the amusement which he cannot find alone, and society can only be found at the public-house; then there is a double evil, because, besides the waste of precious hours, there is a necessary expenditure; or, perhaps, he resorts to the skittle-ground, the bagatelle table, or other gambling amusements, in which case the loss to his family is far more serious. Man is a social animal, and unless he has occupation, he gets into mischief. It is almost certain that a man without a garden goes to the public-house; and he cannot do so without spending money, which would be useful on his children's back, or in the purchase of household comforts. Many an industrious man, unused to tippling, has been totally ruined by his leisure hours; and it is much to be regretted that there are no means of profitably employing the interval between business and bed time. If a man has his garden, he blends amusement with labour, and profit with both. Gardening teaches forethought, because all the operations are performed with a view to the future. We sow because we desire to reap. We plan all our affairs with regard to some ulterior, not a present result; and this gives us a habit of thinking and of calculation. A piece of ground is no sooner cleared of its crop than we begin to consider what is the best thing to occupy it with, and how soon it will be vacant again. Gardening exalts the mind; of this fact there can be no doubt. Every leaf and flower proclaims the wisdom and goodness of the Almighty. The man who can watch the progress of vegetation, and the effects of the seasons, without being impressed with a proper notion of his Maker's bounty, must be insensible to everything. Gardening invigorates the frame. There is hardly an exercise so healthful; the whole body is in motion in the different operations. The digging, hoeing, and weeding, keep all the muscles in play; and it is admitted by all, that the smell of the newly turned earth is congenial to health; a fact proved also by the longevity and hearty lives of the agricultural labourers. The man who loves his garden, wants no other amusement, and instead of wasting his substance in the very natural pursuit of occupation for his mind among companions similarly situated, he finds every shilling in his pocket, and the economy of his household greatly assisted by the crops in his garden; independently of which, there is downright enjoyment, in every sense of the word, from the time the ground is dug to the period of reaping the fruit. The Clergy have seen this, and are, therefore, warm patrons of the science. They have seen, with great satisfaction, that to give a man a garden is to give him profitable occupation for his leisure hours, and keep him out of mischief; and they have always been foremost in the promotion of Horticultural Societies and allotments of land to the poor. It is gratifying to see the change that has been made in whole towns and villages by the establishment of Horticultural Societies and the encouragement of cottage gardening. It is almost incredible to witness the improvement that a few allotments have made, and it is much to be regretted that there are not means taken to increase the number of gardens—for there are very few things contribute so much to the changing of idlers and drunkards into useful members of society, as the means they afford of profitably engaging their leisure time.

THE WILD PÆONIA.

The character of the genus Pæonia is as follows:—*Calyx* of five persistent sepals. *Petals* five or more, nearly orbicular. *Disk* fleshy, surrounding the ovaries. *Carpels* (follicles) two to five, one-celled, many-seeded, *bursting inwards*, crowned with the bilaminated stigmas. Roots *fascicled*. Cauline leaves, *twice ternate*. Flowers *large*. One species is met with naturalized in this country.

Pæonia corallina.

P. corallina, Retzius (entire-leaved Pæony). Radical leaves, twice ternate; leaflets ovate, entire, glaucous beneath, capsules downy, recurved from the base. A herbaceous perennial, growing two feet high, with fleshy fibrous roots, erect stems, and solitary terminal flowers, about four inches across, of a beautiful crimson colour, with yellow anthers; the petals are roundish-oblong, and concave; the follicles, or seed-vessels, are of a coriaceous texture. Flowers in May and June. Found on the rocky cliffs of the Steep Holmes in the Severn, but probably naturalized.

The Pæony is a well-known showy, even magnificent border flower; but the wild sorts are much eclipsed by the handsome cultivated varieties which are numerous in our gardens. Even the single ones are showy, but the double varieties are really gorgeous; and they are numerous, and of many different colours, from white to deep rose, through various shades of pink and red. A yellow-flowered single species has been recently introduced, but is yet very rare. The Greeks thought it to be a flower of divine origin, and to have emanated from the moon, and that it shone during the night: they believed also that it had the power of averting tempests, and protecting their harvests from injury, driving away evil spirits, &c. It is probable that from these superstitions, handed down to modern times, the belief has arisen, that what are called "anodyne necklaces," which are still sold in shops, and turned out of the dried roots of the Pæony, will prevent convulsions in children, and render the cutting of their teeth easier.

Much might yet be done in hybridising the Pæony; and the subject is well worthy the attention of florists.

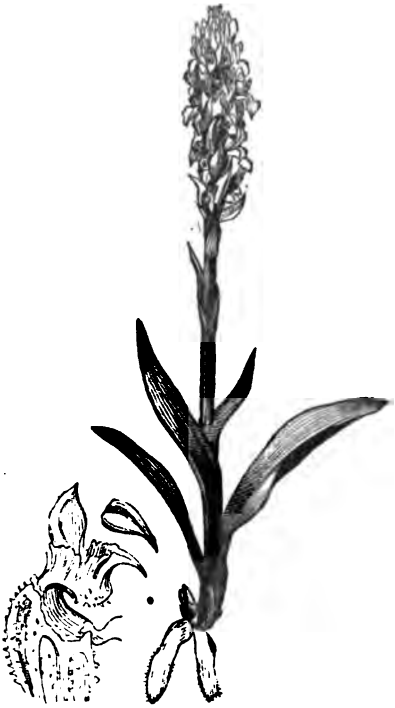
THE SPIRANTHES, OR LADY'S TRESSES.

AMONG the smaller of the species of Orchids which are natives of Britain, are three species of Spiranthes, by some called Neottia. They are plants which can lay claim to no great amount of beauty, but each of these is interesting to the botanical investigator, and one, the *Spiranthes cernua*, is, perhaps, the most rare and local plant of the whole British flora, being found, so far as is known, only in one spot in the three kingdoms. Of this plant the accompanying cut will give a very good idea.

Spiranthes autumnalis, Richard (fragrant Lady's tresses).—Tubers ovate-oblong, thick; radical, or root leaves, ovate-oblong stem leaves like bracts; spike dense. A small tuberous rooted perennial plant, with three or four short oblong tubers, from which are produced ovate-oblong leaves, and a dense spike of small greenish white blossoms, supported on a stem from four to six inches in length; the flowers in the spike all point in the same direction from one line; but, from the spiral twisting of the spike, they are made to appear as though pointing in all directions. Flowers in August and September. Found in dry hilly chalky and gravelly pastures and open places. It is also called *Neottia spiralis* (*Swartz*), and *Ophrys spiralis* (*Linnæus*).

Spiranthes æstivalis, Richard (summer Lady's tresses). — Tubers elongated cylindrical; radical leaves oblong lanceolate, stem leaves narrowly lanceolate; spike dense. A small tuberous rooted perennial, producing four or five elongated tubers, oblong lance-shaped leaves, and a stem of from three inches to a foot in height, bearing a spirally twisted band of greenish white flowers, with the lip larger than in the last. Flowers in July and August. Found in a bog in the New Forest, and also at St. Owen's pond, Jersey, but a rare plant.

Spiranthes cernua, Richard (drooping Lady's tresses).—Tubers elongated cylindrical; radical leaves linear lanceolate, stem leaves triangular lanceolate; spike dense. A small perennial plant, with two fleshy oblong cylindrical tubers, about four linear lanceolate leaves two or three inches long, and an oblong dense spike of rather large milk-white flowers, arranged spirally in three rows, and situated at the top of a stem about six inches high. Flowers in August. Found in North America, at Fort Vancouver, and the Rocky Mountains; and in the British Islands, only at Bearhaven, Cork, where it seems confined to a very few spots near the sea-shore, occupying the drier parts of rather boggy fields. A beautiful figure and description was published in the *Linnæan Transactions*, about two years since, prior to which time very little was known about the Irish plant. It has been called *Ophrys cernua* (Linnæus), *Neottia gemmifara* (Smith), and *Spiranthes gemmifara* (Lindley).



Spiranthes cernua.

These plants can only concern the cultivator as mere objects of curiosity, being too small to be grown for any purposes of ornament. Such being the case, it is most advisable to have a few plants cultivated in pots, where they are at all required. Being small, small pots will suffice for them, or several plants may be put together in a larger one. The peculiarities of their natural habitats should be regarded in providing them with soil; thus, *S. autumnalis* grows in chalky or gravelly places, and may be grown in a mixture of loam with chalk; *S. æstivalis* grows in bogs, and should be potted in turfy peat, and kept moist: and *S. cernua* grows in salt marshes, and should have a sandy loamy soil and libations of weak saline mixtures. They are quite hardy, but would most conveniently be kept with such small herbaceous or alpine plants as require protection in winter.

The generic character of Spiranthes is as follows:—Perianth ringent (flower gaping). Lip channelled, clawed, fringed. Stigma roundish, with a rostellum (beak), which is straight, bifid (two cleft), with an elongate linear appendage between its points. The general appearance of the plants and their blossoms will be understood from their station amongst orchidaceous plants. The three natives species are called *S. autumnalis*, *S. æstivalis*, and *S. cernua*.

AN ABSTRACT OF REPORTS, PAPERS, AND PROCEEDINGS OF THE HORTICULTURAL SOCIETY OF LONDON, WITH NOTES BY A PRACTICAL GARDENER.

THE GUERNSEY LILY.—Vast numbers of the *Amaryllis sarniensis*, or Guernsey Lily, are annually obtained direct from Guernsey, where they are largely cultivated, and sold in the seed shops; but, like Hyacinths, they are seldom bloomed the second season, or if flowered at all produce weak and unsatisfactory blossoms. There is no doubt they might be bloomed year after year, if proper attention were paid to their growth; and we find this has been done by the late T. A. Knight, Esq., who was a most zealous cultivator and experimentalist in horticultural matters. In relating his experience on this subject, Mr. Knight writes:*—

"I should think the matter of this communication scarcely worth notice, if I were not perfectly confident that the same mode of culture is applicable to bulbous roots of every kind which do not flower freely (exclusive of those which grow in water), and with but little variation to plants of every kind. Wishing, however, at the present time to confine myself to very narrow limits, I shall simply relate the experiments which I have made upon the Guernsey Lily, with the conclusions which I have drawn from the result of those experiments; and my narrative will I think be most plain and intelligible, if I confine it to treatment through successive seasons, of a single root of that plant.

"A bulb of the Guernsey Lily, which had flowered in the autumn of 1822, was placed in a stove as soon as its blossoms had withered, in a high temperature, and damp atmosphere. It was planted in very rich compost, and was amply supplied with water, which held manure in solution. Thus circumstanced, the bulb, which was placed in the front of a curvilinear roofed stove, emitted much luxuriant foliage, which continued in a perfectly healthy state till spring. Water was then given in smaller and gradually reduced quantities till the month of May, when the pot in which it grew was removed into the open air. In the beginning of August the plant flowered strongly, and produced several offsets. These, with the exception of one, were removed; and the plant, being treated precisely as in the preceding season, flowered again in August 1824. In the autumn of that year it was again transferred to the stove, and subjected to the same treatment, and in the latter end of the following summer, both bulbs flowered in the same pot with more than ordinary strength, the one flower-stem supporting eighteen, and the other nineteen, large blossoms. One of these flowered in the beginning of August, when its blossoms were exposed to the sun and air during the day, and protected by a covering of glass during the night, by which mode of treatment I hoped to obtain seeds; but the experiment was not successful. The blossoms of the other bulb appeared in the latter end of August, and were placed in the same situation in the stove which the bulb had occupied in the preceding winter; and I by these means obtained three apparently perfect seeds.

In the foregoing experiments, I conceive myself to have succeeded in occasioning the same bulbs to afford blossoms in successive seasons; by having first caused the production of a large quantity of true sap, and subsequently, by the gradual abstraction of moisture, having caused that sap to have become inspissated, and in consequence adapted to the production of blossom buds. Some gardeners entertain an opinion that bulbs may be excited to produce blossom buds by being kept very dry, after their leaves have withered: but I believe this opinion to be wholly unfounded; and that the blossoms are always generated whilst the living foliage remains attached to the bulb."

THE CRANBERRY.—The Cranberry grows in swamps, and the late Sir Joseph Banks cultivated them successfully in a fish pond. The following is a method of growing them without such aid, as practised by Robert Hallett, Esq., F.H.S.:—

"In April, 1818, I filled half-a-dozen shallow boxes, each about eighteen inches square, and four inches deep, with peat earth, and planted in them, at one inch apart, cuttings* of the cranberry, about an inch and a half in length, placing them in my melon bed, where they were frequently watered; the cuttings rooted freely and threw out strong shoots, and in the June following they were fit to plant out.

"Having collected from a dry hill, where wild heaths flourished in abundance, a sufficient quantity of peat earth,* I formed a bed one hundred and fifty feet long by four feet wide. In order to give the plants room to extend their roots freely, I caused eighteen inches in width of the centre part of this bed to be excavated throughout its whole length the depth of two feet, and having first covered about two inches of the bottom of the trench with small wood, I filled it up with the peat earth, well trod in ; on the sides of the bed, to the extent of its width, I put only six inches depth of this mould. About the end of June, 1818, I placed one row of plants in the centre of this bed, about two feet† apart from each other in the row; these soon put forth luxuriant runners, extending before the winter to the edges of the bed. At the close of the year 1819, the bed was covered with the plants, and the runners of the former year had thrown out a number of upright bearing shoots, from which, the following year, I gathered several bottles of excellent fruit, much superior in flavour to any imported berries I have ever tasted. In the autumn of 1820, I had the satisfaction to see the entire bed filled so completely by the plants, as to form a mass through which scarcely a weed could penetrate, the whole exhibiting a profusion of bearing branches.

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* Transactions of Horticultural Society.

* The cuttings may be taken from any part of the old plants, for the old wood will root equally as well as the young branches.

"The plants, after the first supply, may easily be propagated to any extent that may be required, for though they root more freely under glass, yet a hot bed is not absolutely necessary to raise them. I have known the cuttings strike well, and make good plants in pots in the open air, and after being rooted they require no trouble to preserve them. One of the boxes of those raised in 1818 was left exposed to the open air throughout three summers and as many winters, and though no care was bestowed on the plants, and the depth of earth did not exceed four inches, yet neither the summer's heat nor winter's cold affected them, and they produced some very fine berries. This proves their hardy nature, and that an exposed situation will not be inimical to the health of the plants. The berries I have likewise found to be as little susceptible of injury from being allowed to remain out late in the season, for on examining my bed in April, I discovered that out of a considerable number which had not been gathered in the autumn, many were at that time in a perfect state on the branches.

"Four feet is the most convenient width for the beds, but by passing the shoots under a path formed of peat earth, wherein they would root, other beds might soon be established on each side. From four to six inches depth of peat earth would be sufficient for such beds, and the paths should be level with them, it being desirable not to drain off the moisture.

"Dry heathy commons and wastes would produce a large supply of these fruits, with little labour or expense, either for the markets or for food for moor game. A single plant would soon extend itself over a large space of ground, if turned up and kept clean till the runners had taken root, and as no manure is requisite, and little or no weeding wanted, the first trouble is all that would be necessary, except in situations where hares or rabbits abound : these animals are particularly fond of the young plants, and a temporary fence must be made to protect them from their depredations.

"Dung is peculiarly injurious to the cranberry ; it absolutely destroys it, as I have proved by a variety of experiments, in which I found that all the plants completely failed which were planted in any compost of which garden mould or dung formed a part. Peat earth is the only soil in which they will flourish : nor can a supply of this very valuable fruit be expected except in situations where the plants will have a due enjoyment of sun and air."

[The American cranberry (*Oxycoccus macrocarpus*) is preferable to the common English kind (*O. palustris*), bearing larger fruit, and as some consider, of better flavour.]

MELONS FROM CUTTINGS.—The plan of raising a second crop of melons from cuttings taken from a former crop which has produced fruit has some advantages ; Mr. C. Harrison, formerly gardener at Wortley Hall in Yorkshire, thus describes his method of doing this, and its success :—

"When the first crop of fruit is nearly gathered, I take off cuttings from the old plants. The cuttings which I select are those extremities of shoots which are showing the most small fruit. They are cut off close under the second advanced joint from the top ; the two lower leaves are taken off, and each cutting thus prepared is ready for insertion. I put two cuttings into each pot, and insert them close to the side of the pot, filling the pots with light rich soil, gently shaking it upon the cuttings. The pots used are twenty-fours. After being watered, I place the pots in a small one-light frame, a hot-bed having been previously prepared under it a sufficient time to allow the burning heat to subside before the bed is thus used. I cover the bed to the depth of eight or ten inches with moderately dry soil ; in this the pots with the cuttings are plunged up to the rim. The frame is then kept close for four or five days, in order to retain the steam, which is very essential in supporting the cuttings until they strike root. The frame is also shaded for some time during four or five hours in the middle of the day. Care is also taken that the heat is not so intense at the bottom of the pots as to burn the cuttings. In about a week the cuttings, if properly managed, will have struck root; this will be shown by their shoots pushing.

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* The peat earth used had no part of the turf or sod in it; that had previously been taken off to the thickness of about two inches, and dried for fuel.

† If planted four or six feet apart in the row in the centre of the bed, the shoots would soon meet.

The first crop of melons having been gathered from the old plants, I take out the soil in which they have grown, and replace it with some new, to the depth of twelve inches. The beds are also at the same time lined with fresh dung. In about ten days from the time of inserting the cuttings, they will be ready to plant out; and having prepared the original beds as here described, I turn out one pot of cuttings entire, under each small three-light frame, and to each large three-light frame I allot two pots, one to each end light. When the plants have pushed about fourteen inches, I pinch off the end of each shoot, to cause them to produce fresh runners. The fruit which had shown previously to the cuttings being taken from the old plants will, after the cuttings are finally planted out, swell very rapidly, and in three weeks after the bed has been replanted, I have cut abundance of fine fruit, some weighing seven or eight pounds each, varying in this according to the kind. The plants also yield abundantly, being much more productive and healthy than if they were old plants cut in, in the usual manner. I have uniformly gathered of the second crop from twelve to twenty fruit in each light.

A considerable advantage belonging to this plan is, that the plants never run to length, they need no more stopping than already described, nor do they require any thinning of the shoots. I have also to observe, that it often happens in melon plants, not raised from cuttings, that the stems near the roots will crack, and when water is poured upon such places it causes the plants to perish; but this is never the case with those raised as above described.

Growing Plants in Moss.—The practice of growing plants in moss, though not now a novelty, is not without interest. We therefore introduce the following abstract of a paper published in the Horticultural Society's *Transactions* treating on this subject: it was written by Mr. Street, a gardener in East Lothian:—

"The Mosses I use are the several species of Hypnum, such as H. Schreberi, squarrosum, purum, &c.; these I collect in woods from under the bushes, taking up with them the decaying stalks and leaves which are found amongst them. Sometimes I add about an inch of the surface of the vegetable mould which is under the mosses, to mix with them in the pots. The mosses so collected are pressed closely into the pots, and the plants are put into them as if into mould. For some plants I find it useful to add a little loam to the mosses, in other cases sharp sand, which is sometimes preferable to the loam. If the plants require manure I give it in a liquid state. As the mosses decay the mass gets closer together, and I then fill up the top of the pot with fresh material; but if the roots are much at the lower part of the pot, I prefer making the addition at the bottom. The plants which I have cultivated in mosses are many; the following amongst others:—Canna indica and patens, Calla æthiopica, Agapanthus umbellatus, Hydrangea hortensis, Disandra prostrata, Justicia nervosa, Gorteria rigens, Pelargoniums, Cinerarias, &c. Some plants do better, and flower earlier and more vigorously, in mosses than in mould, such as Eucomis striata, Eucomis punctata, &c. The roots of whatever things are put into the mosses spread and increase surprisingly, especially such as require to be kept wet, for the mosses retain moisture longer and more uniformly than mould. Pots of ornamental plants which are to be placed in the apartments of a house, have great advantages when filled with mosses, for independent of the facility with which they are moved, they make no dirt or litter on the floor, which often occurs when the pots are filled with mould. In sending plants to a distance, those which are rooted in mosses travel admirably, they turn well out of the pots, and the roots are so mixed with the mosses that they do not separate from them as they would from mould; and besides this safety to the plants, the mosses are so light that the package is conveyed with great comparative ease. I have succeeded in striking cuttings of many plants in mosses, such as Aucuba japonica, Hibiscus Rosa-sinensis, Buddlea globosa, &c., and those make roots very freely and much faster than they do in mould. I believe the plan might be generally adopted in propagation by cuttings. Some bulbs, I do not doubt, will do well in mosses; I have tried the yellow crocus, and found it to succeed perfectly, and to flower most freely when so treated. With hyacinths I have not yet succeeded; the varieties of polyanthus narcissus, such as Grand Primo and Bazelman major, blossom well when grown with a portion of mosses in the pots. Some species of Cape gladioli also succeed well."

[We have bloomed hyacinths with great success in moss, and in much shallower vases and pots than we generally use for earth or water: of course the supply of moisture must be uninterrupted. We have also employed moss in connexion with the drainage, and with much success in the case of plants whose duration is short; a small portion spread over the drainage to prevent the soil from intermixing with the crocks is in all cases advantageous; and in the case of annuals and flower garden plants which are placed in pots for a month or two to facilitate transplanting, a little moss at the bottom of the pots is preferable to the crocks which are usually employed.]

CONTEMPORARY WRITINGS,

AND ORIGINAL NOTES CONNECTED WITH HORTICULTURE AND NATURAL HISTORY.

Rosa Harrisonii.—A plant of this fine rose, in the conservatory of the Earl of Radnor, at Coleshill House in Berkshire, has this season brought to perfection upwards of three hundred and fifty blossoms. The plant is a standard. It had been subjected to a gentle heat, and under these circumstances the blooms appeared to be produced in a more perfect state than is usual out of doors. It has been treated thus:—After flowering, the branches were partially cut back, and the plants placed out of doors in rich soil, and well supplied with liquid manure in the growing season. In the autumn they are again taken up, and potted, and submitted to a gentle heat to accelerate their blooming.

The Leek.—Of this useful esculent there are two principal varieties, the Scotch and English; the former much hardier, thicker-growing, and not so soon running to seed, the latter generally earlier, and not so hardy, but more fitted for autumn and early winter use. The leek is generally propagated by seeds, and is usually regarded as a biennial—not a bulb; this however is a mistake, a number of little bulbs being produced at the bottom of the seed stalk, which takes two years to arrive at maturity. The leek is therefore a true bulbous perennial, requiring two years to perfect its bulbs; and subdividing itself after the manner of the potato-onion, and thus, like it, may be continued without rearing from seeds after a stock of bulbs is once obtained. These bulbs should be planted in rows nine inches asunder, and four or six inches distant in the rows; they require rich deep soil, but it should not have been newly manured. In autumn they must be taken up, a sufficient quantity stored for use, and the rest planted for a new crop. These bulbs are thus easily reared to the size of eight or nine inches in circumference; and are very delicate, much superior to the onion.

Queen-bees.—At a recent meeting of the Entomological Society, Mr. F. Smith exhibited a pair of specimens of the queen and drone of the hive-bee, which had been taken paired by a friend, thus settling the long disputed question as to the mode in which the queen of the hive is impregnated. The queen was very pale in colour, and had not the elongated abdomen which characterises the old queens.

The Tea-plant in India.—We learn from the *Calcutta Gazette*, that the efforts of Dr. W. Jameson, superintendent of the botanic gardens in the north-west provinces of India, to introduce and extend the cultivation of the tea-plant have been highly successful. The tea brokers in England have, moreover, pronounced the Indian tea equal to China tea of a superior class, possessing the flavour of the orange-pekoe, but more than its usual strength, and in other respects resembling that imported under the name of ning-yong. The tea-tree in Kemaoon is not only identical with the China plant, and as capable of being made into as fine a description of tea, but the climate and soil in Kemaoon are as suited to the favourable growth of the shrub as the finest of the Chinese localities; and, moreover, the tea is as highly prized in the districts in which it has been raised as it is in England. One hundred and seventy three seers of it were recently sold at Almorah, and produced from four to five rupees the seer, a price equal to the best foreign tea sold in Calcutta. According to the calculation of Dr. Jameson, the price for which it can be raised is so low as to afford the greatest encouragement for the application of capital: he estimates that if cultivated on a sufficiently large scale, the prime cost in Calcutta, including every expense, would be little more than eight annas a seer, or one-eighth of the present price. Supposing the cost of cultivation to be double what is here estimated, a sufficient amount of profit would still be left. The capacity of the provinces of Kemaoon and Gurhwall for the enlarged production of the article, does not moreover appear to be limited to particular localities. According to the latest report that has been furnished, 176 acres were under cultivation, containing not fewer than 322,579 plants. The crop is thriving in different places over four degrees of latitude, and three degrees of longitude; and 100,000 acres are available in the Dhoon alone for the purposes of tea cultivation. At a maund an acre, they would yield 7,600,000lbs., which is equal to one-sixth the entire consumption of England.

Rhododendrons.—Large masses of rhododendrons are exactly what are suited to form the line of separation between the highly-dressed flower garden and the park; as they may be introduced without, in the least, obstructing from view the pleasing and varied surface of the latter. The various shades of colour exhibited in their blooms during the flowering season render them attractive and interesting objects; and from their bright and glossy foliage, and varied heights, they add, at all times, to the general effect of the scenery. They are decidedly preferable to the tall, mixed, common shrubs, too generally planted for such purposes.

Exposing Greenhouse Plants in Summer.—Many greenhouse plants, and especially the more delicate kinds, often suffer much injury from exposure to the sun's rays in summer. When so exposed without the benefit of shelter of any kind, the soil is apt to become so thoroughly dried, that it is with difficulty again wetted, and hence the scorched and stunted looking growth which may sometimes be seen on such plants in the summer season. The injury in most cases arises not from exposing the stem and branches of the plants, but from exposing the pot in which it is growing; the sun's rays acting on the sides of the pots, in conjunction with the evaporation constantly going on, soon deprives the soil of its moisture; and as all the tender roots are usually more or less in contact with the inner surface of the pot, their injury is inevitable. It is no uncommon thing to see the soil so much dried as to shrink quite away from the pot, and in this case the roots cannot avoid being more or less injured. Under such circumstances, too, the water which is supplied sinks down as fast as it is poured on, and fails, for a long time at least, to moisten the interior of the soil. Then again, the necessity for constant watering caused by this exposure, is an evident waste of time. When plants are turned outdoors (and also when kept in-doors) their roots ought to be sheltered by some means from the influences alluded to; plunging the pots in some open porous material will answer the end as well as anything; and of the substances that may be employed, moss, coal ashes, rough peat, sawdust, or fine charcoal are among the best that can be employed. It is desirable, also, to afford the entire plants a very thin shade during the intense sun heat of summer, but the lighter the material employed the better.

Aloysia citriodora.—This is a favourite forcing plant, its lemon-like scent being generally esteemed. Young plants should be raised from cuttings in March or early in April; when they are rooted encourage luxuriant growth by potting them frequently in coarse loamy soil and leaf mould, and induce a compact bushy habit by frequently pinching off the tops of the young shoots until about the end of May. Then plant them into a bed in the garden, where the soil is open, moderately rich, and resting on a porous bottom, such as a layer of old mortar or rubble; place them a yard apart, and continue stopping the young shoots when about two or three inches long, until the plants become large compact bushes. In September, take them up and pot them in large pots, and place them in a close cold pit, giving but little water; the leaves will soon fall. In this situation they may remain with occasional slight waterings until they are required in succession for forcing, through the winter months.

Liquid Manure.—An excellent liquid for all kinds of plants grown in pots may be prepared by mixing one gallon of soot, one bushel of sheeps' dung (deer or cows' dung will do), and a quarter of a bushel of quicklime, in a hogshead of water. It should be well mixed up and stirred when first made, and then, once a day, for three or four days, strained off into a cask, another quarter of a bushel of quicklime being added each time; it will thus readily clarify. This liquid is to be used always in a tepid state, when applied to plants kept in a high temperature; to strong plants, in the proportion of one gallon mixed with two of soft water; and to weakly plants, in the proportion of one to three gallons of water. The pure water used should, of course, be rain water, if it can be obtained; or if spring or well water is necessarily used, it should be well aërated—that is, exposed to the air and sun in flat open vessels.

Bulbous Plants.—To check the growth of the foliage of bulbous plants is very decidedly injurious to them. After they have done flowering, it should be an object to stimulate the leaves to make strong and vigorous growth; and this should be done under the influence of strong bright light, and continued till they show symptoms of having passed their maturity; this is generally indicated by their turning yellowish, and decaying at the tips. Moisture—both at the root, and in the atmosphere—is then to be reduced gradually until they are brought to a state of rest. It is, therefore, an erroneous though a common practice to cut off the foliage of hardy bulbs as soon as their bloom is faded, or even at any subsequent period, while that foliage is in a growing state; and it is also hurtful, though sometimes necessary, to take them up and remove them to another place, unless this can be done without greatly disturbing their roots.

Parasitic fungi infesting inhabited houses.—The Rev. E. Sidney recently delivered a very interesting lecture on this subject, before the Royal Institution. After some introductory remarks relating to the various forms of different fungi, and their chemical properties, he proceeded to describe the most remarkable of those found troublesome in dwellings, under the following heads:—(1.) *Fungi infesting timber.* Not only the *Merulius lacrymans* and *Polyporus destructor,* but any fungi found on decayed trees, were capable of producing dry-rot. From small white points there radiates a filamentous substance, parallel with the surface of the timber; this is the spawn of the fungus; it soon gains strength, and penetrates the intercellular passages of the wood, and thus disintegrates the timber. Mr. Sidney suggested that the development of these fungi might depend on the condition of the sap in the wood. The experiments of Dutrochet on the growth of fungi in acid and alkaline solutions, tend to elucidate the phenomena of dry-rot. Whatever may be the efficacy of Kyan's principle, much might be effected by instituting experimental research into the best times for felling trees; spring appears to be the worst season.—(2.) *Fungi infesting the culinary department.* Bread is attacked by a *Penicillum,* as well as by two or three other moulds. The French troops experienced great injury from bread thus poisoned. The fungi attacking meat are chiefly, according to Mr. Sidney, Agarics in a rudimentary state. *Penicillum glaucum* is, however, found destroying salt provisions.—(3.) *Fungi infesting cellars.* These are probably Polypori and allied fungi, in various stages of growth. When pressed into a state of sufficient consistency, these form excellent tinder: none of them will grow where rock-salt is present. Fermentation is generally attended by the growth of molecular spores. Both the yeast and vinegar fungus are mere states of *Penicillum glaucum,* the mode of their growth being modified by the peculiarity of the medium in which they are developed. Mr. Sidney noticed the following experiments, made to ascertain whether the so-called vinegar-plant was able to produce fermentation:—Four equal quantities of sugar and water became acidified in the following order, —*a,* when containing washed fungus; *b,* containing yeast; *c,* containing fungus unwashed; *d,* when left to itself; in all these cases *Penicillum glaucum* at length appeared.—(4.) *Fungi infesting store-rooms,* &c. These situations are chiefly infested by *Penicillum glaucum;* its growth is said to be prevented by any essential oil. Sugar is attacked by *Torula sacchari.* Fruit is subject to several fungi. It is remarkable that the brown matter on attacked apples and pears has been found to produce potato disease by inoculation. Mr. Berkeley's recent experiments on Bunt, show that fungal disease may be propagated by the mere grumous matter in spores. —(5.) *Fungi attacking books and object-glasses of telescopes.* The former are hairy fungi; the latter the small *Penicillum* growing on the particles of dust which insinuate themselves into the glass.—(6.) *Fungi attacking wardrobes, and the contents of the dairy.* Under this head Mr. Sidney referred to the *Penicillum* as appearing on leather, and to the *Torula* as infesting cheese. The speculation of the convertibility of milk globules into fungi was noticed as an unsubstantiated hypothesis.

THINNING OUT PEAS.—The principle of thinning crops as one means towards securing perfect growth is indeed commonly recognised, but too seldom acted on. In no culinary crop, perhaps, is this remark so well illustrated as in the case of garden peas. If we look at a crop of peas when they are just vegetating, we shall, in almost every case, see the plants standing thickly together, forming then, in their embryo state, an unbroken line. And they are generally allowed to grow on without any alteration in this respect. In nine cases out of ten, two-thirds—often more—of the seed sown is wasted, and the crop is thereby injured. All the larger growing kinds of peas, therefore, which are grown to supply the summer and autumn crops, should be kept thin, both by sowing fewer seeds than is usual, and subsequently thinning out the plants if necessary, so that the plants may stand clear of each other; the largest varieties may be thinned to three or four inches apart, the smaller ones to two inches. The plants, too, instead of being allowed to run up to a great height, should be topped once or twice to make them bushy. If these two points of practice are attended to in conjunction with each other, the pea crops would be found to furnish successive supplies in much better condition than is now often found to be the case.

EPACRISES.—The habit of these plants is to produce long annual shoots, which, if left untouched, would soon render the plants unsightly. During the younger stages of their growth, these shoots should be frequently topped so as to form bushy plants; this should be continually done, as they grow two or three inches in length. When the plants have attained a moderately large size, however, this topping must not be followed up too rigourously, or the strength of the bloom will be destroyed, as well as the characteristic beauty of the plant. At this stage, however, the plants must by no means be left to themselves, or they soon get out of form. A severe annual pruning in of the long straggling shoots should be practised, and this may be done as soon as flowering is past: they then again form moderately strong shoots, which are furnished almost throughout their whole length with blossoms at the proper period. On the other hand, if the close stopping of the shoots is then practised, none but small weak shoots can be secured for bloom bearing.

Show Pelargoniums.—Public opinion seems to be setting in against the employment of so many stakes as have hitherto been used in training these lovely flowers for exhibition purposes; although it is not likely to be found possible to produce large bushy specimens at exhibitions without a considerable number of stakes, owing to the necessity of using them to ensure safe travelling. In respect to culture and bloom, the exhibition plants of the present day are surpassingly grand; but it is suggested that even the grandeur and beauty of these plants become tiring from the want of variety. A few inches higher or lower, broader or narrower, is the ordinary range which variation in the size and form of the plants is allowed to take. The introduction of pyramidal training has been recommended for the purpose of affording, not only in the flower house, but in the exhibition tent also, some degree of variety among the plants. It is not proposed that the present dwarf compact bush form should be given up, but merely that some few of other forms should be made to accompany them for the sake of variety and effect. Thus, a few pyramidal pelargoniums, three, four, or five feet high above the pot or tub, and covered with flowers, both foliage and flowers commencing at the top of the pot, it is argued, will relieve the monotonous beauty now so evident, and would be in themselves, exclusive of the variety they afford, objects of decided elegance.

Entrance Gates and Lodges.—Every lodge and gate situated at the principal entrance to a mansion, should correspond in style with the architecture of the house. The visitor, on entering, would then be exempted from conjecture, and fully prepared to admire on the one hand the beautiful and regular proportion of the Grecian, or, on the other, the more bold and massive style of the Gothic order. It would be difficult to define the style of architecture frequently exhibited in those incongruous masses of bricks and mortar, called lodges, so prevalent at the present day. Those who are entrusted with their erection should pay more attention to the rules of architecture, for lodges and gates give importance alike to the villa and the mansion.

Suggestion for Destroying Wire-worms.—The milder kind of mercurial ointment consists of one part of nitrate of mercury and thirty of oil and hog's lard. A very small portion of this will destroy an insect. One pound and a half of the nitrate of mercury to one cwt. of grease would perhaps be sufficient. The economical manufacture of it is a question of importance. It might be mixed with "greaves," or the refuse of the soap-boilers, which, in an experiment tried last year, was found more fertilising for turnips than either bone-dust and ashes, or superphosphate of lime and ashes. Perhaps the refuse of train-oil manufacturers would be found advantageous; for this mixed with sawdust has been found very fertilising. The expense of either of these greasy articles, and of the nitrate of mercury, would not be much; and their application might destroy the wire-worm.

Improvement of Garden Tools.—It is an admitted principle in political economy that, in proportion as the amount of produce can be increased by a reduction of labour, so great is the proportionate increase of wealth to the producer. Upon this principle all improved machinery for the production of our manufactures, and implements for the cultivation of the soil, are constructed. In agriculture, where the soil must return a profit from the expenditure, this principle meets with no little attention. How great, how numerous, are the yearly experiments made to produce the most perfect implements, by which the expenditure might be lessened, while the profits might increase. Agriculturists neglect no opportunities of carrying these out, while they encourage, by rewards, those who produce the most perfect at their exhibitions. What have gardeners to produce with regard to horticulture? Not, certainly, such as were used by the ancient Britons, but that they serve no better purpose, is nearly all that can be said of our present tools and implements. To learn the use of garden tools, such as are placed in their hands, is commendable; to learn to improve them, more so. The same principle which incites the agriculturists should be also paramount with gardeners. The improvement of garden tools and implements is a subject worthy of earnest attention. Mr. Barnes, of Bicton, some time since, made some notable improvements in the hoe, but some general system is required. To have hoes or any other implements or tools made to order is an unnecessary expense, if they could be done as well by a general manufacturer. Horticultural societies are well adapted to afford a stimulus in this matter, by offering special prizes for their improvement; and they would do well to take the matter into consideration in the preparation of their Prize Schedules.

The Chive (*Allium Schœnoprasum*).—Frivolous as this may appear to be, it is not the less valuable to the humble cottager, whose spring food requires seasoning after his winter stock of onions is exhausted. I have grown chives for many years, and I think I hear some wiseacre say, "Well, surely, there is nothing more easy to cultivate, or more simple to use, than chives." No doubt! Yet, strange enough, they are neither cultivated nor used aright by any gardener, cook, or cottager that I have seen yet; and, after I have explained the simple treatment of this truly useful, homely plant, every one will cry out, "We all knew that." Why, then, did you never put it in practice? To grow chives everybody knows right well how. They are generally parted in the spring, planted in some well-manured soil, either in rows or patches, and, when well watered, the tops are soon ready for cutting. Now, this little plant is, in reality, a bulb, and as such, however small, it requires the proper treatment of a bulb; therefore, the time to shift it is certainly not the spring, but the autumn—not the time when its leaves are just pushing a few inches above the surface. Try the hyacinth with this treatment, or ask the tulip fancier his opinion of this treatment of bulbs. The time to plant chives is when they are dormant; and, at that time, they will be found to be little bulbs, without roots or leaves, and may be sown, like onions, on a richly manured bed, and covered about an inch deep; or dropped in drills, nine inches asunder, and half an inch apart in the drill. Though the leaf of the chive grows only about nine inches long, the roots of the plant will run three feet deep into the earth if they can find food and moisture. The proper culture of chives, therefore, is to plant them, like other bulbs (as tulips, for example), in richly prepared land, early in autumn, that is, after their foliage has turned sere and yellow. Now, for the using of them after they are grown. Whether the spring onion be wanted for the Scotchman's kale pot, or the cockney's salad bowl, is no matter, it is wanted; and every gardener has proved, by the late winter, that autumn-sown onions, or, indeed, autumn-sown crops of any kind, are liable to be uprooted by the frosts, and consequently killed. The chive, under ground, is never known to suffer from any weather; and, in proof of this, here it is now, nine inches high, green, and fair, before the oak has opened a bud to salute the spring. To cut the tops off the chives is to take the fodder and to leave the grain; try the same doctrine with the common onion or the leek, and ask the cook's opinion of the tops and tails of leeks and onions for cookery, always taking care to leave the blanched bottoms of the leeks, and the bulbs of the onions, in the garden; and by these helps, and the exercise of common sense, I doubt not but all gardeners and cottagers will agree with me in digging up the chives, and washing them like spring onions, which, in reality, they are.—*Forsyth, in Gard. Journal.*

Hothouse fires.—Great waste of fuel is often the result of the ordinary mode of managing hothouse fires. Much of the smoke, for instance, which is in itself a nuisance, is also a waste, for the gases which thus pass away are capable of combustion, and thus of increasing the amount of heat which is developed. Whenever pure coals or coals blended with cinders are employed in furnaces, it will be found to be a palliative of this nuisance to push forward towards the neck of the flue the bulk of the red-hot fuel, previous to mending the fire, and to deposit the fresh fuel in front of the glowing mass. The gas which is liberated and forms smoke, is thus made to pass directly over the hottest part of the fire, and to a great extent becomes ignited. The bulk of red-hot cinders should be considerable before the ash pit doors or dampers are resorted to, and then, particularly at "damping up" for the night, small cinders and moist ashes should alone be employed; on no account pure coals. A writer in the *Pharmaceutical Times* states that a scientific chemical remedy for the smoke nuisance offers itself, by introducing a cast iron tube from a boiler, to convey a column of steam to be dispersed by a rose nozzle over the surface of the coking coal. New combinations thus take place, which affect the entire combustion of the inflammable gases, and where it has been applied the disappearance of the column of black smoke has immediately followed its application.

The Carrot Grub.—I find that trenching the ground two spits deep, and spreading some manure at the bottom of every trench, is almost an effectual cure for this troublesome insect, which was always very prevalent till I adopted this plan. I always do this work in autumn, leaving the surface of the ground rough during winter, and at the proper season it is deeply hoed, raked level, drilled, and sown, without adding any more manure. The half decomposed contents of the rubbish heap answer very well for putting into the trenches, and save better dung for other purposes. Besides preventing injury by the grub, I find that both carrots and parsnips grow much straighter under this treatment than when the manure is dug into the ground in the usual way. In the next autumn the trenched ground is well manured and roughly dug for onions in the ensuing spring.—*Whiting in Gardener's Chronicle.*

Olea Fragrans.—The following is a ready method of propagating and flowering this fragrant plant:—In March or April collect a number of suckers, according to the quantity of plants required, from an old privet plant or hedge; pot the suckers or offsets in light, rich, soil, in four-inch pots; head them down to within four inches of the surface of the soil, and immediately ingraft an olive scion, six inches long, on the stock, so that part of the scion is above the stock and a part below it; the latter portion is inserted in a small bottle filled with water. Tie the scion and stock tightly together with bass, and put a little moss over the top, instead of clay; then plunge them in a cucumber frame, where they quickly become united. Stocks grafted in spring make handsome plants by autumn, and flower early in the following spring. The olive, worked on privet stocks, produces flowers much larger and sooner than when propagated from cuttings, suckers, or layers. The method deserves to be more generally adopted, because less wood and more flowers are produced.

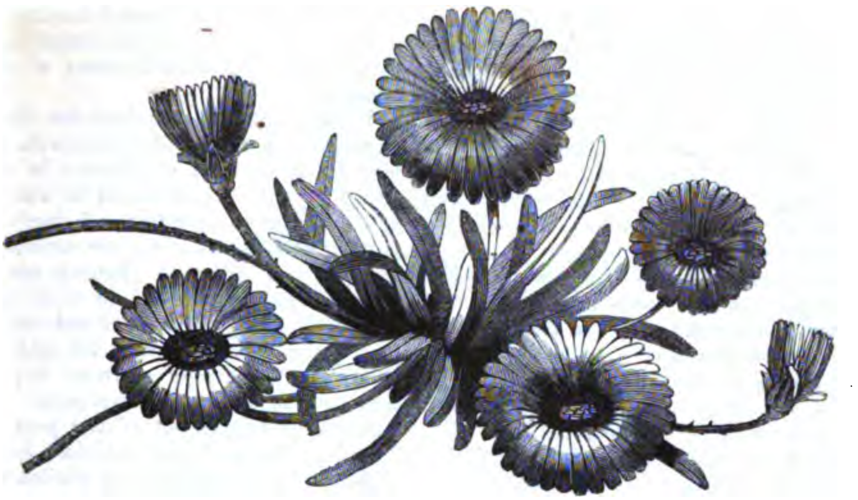
MAIZE OR INDIAN CORN.—By the following treatment good samples of maize, plump and well ripened, were grown in this country during 1846:—To obtain new seed is of the first importance. The Novia Scotia variety, which is that generally recommended, was the kind grown. The ground was prepared in the early part of winter by manuring and rough digging; lines were drawn three feet apart, and, at a distance of three feet apart along these lines, four holes about three inches from each other were dibbled, into each of which a grain was dropped. The patches of plants thus ranged in squares three feet distant. The seed was sown in the first week in April, which in ordinary seasons is at least a fortnight too late. When the plants were two inches high, the ground was carefully hoed, and this operation was repeated several times, both to assist the plants, and to cleanse the ground. In September the bloom-stalk at top was cut off, and the loose leaves were removed to give the corn the benefit of as much sun as possible. In three or four weeks from this it was ripe enough to cut. The general appearance of the plot was not inferior to what may occasionally be seen even in the United States. This plan was practised in the county of Surrey, and the result was very successful. The maize, even when not grown for the sake of its ripe grain, furnishes, when the ears or heads of corn are cut in the green state, a very excellent vegetable for boiling. To bring it to this state there is no risk whatever, for after the ears are cut, the whole of the remainder is excellent food for cattle and for pigs.

POISONING BY PARSNIPS.—M. Buchner quotes several cases of narcotic effects caused by the use of parsnip (*Pastinaca sativa*) having been observed since 1829. It would appear that the root of the parsnip in the first year produces no injurious effects; after the winter, however, as the formation of wood goes on, and the plant blossoms, it acquires poisonous qualities. M. Buchner directs attention to the fact that the celery also is sometimes productive of narcotic symptoms, and is of opinion that the latter case occurs only with the root dug out the second year. He finally adds that it seems, as a consequence, that the water hemlock (*Cicuta virosa*) may be less virulent the first year of its existence, previous to forming stalks, flowers, and fruits.

CAMELLIA, *Countess of Orkney*.—This is a seedling raised by Mr. Nicholson, gardener to the Earl of Orkney, at Taplow; it is a vigorous growing variety, with good foliage and large flowers of a blush-white ground, striped with two shades of rose; the four outer rows of petals are broad and well formed, and, in the fresh opened blossoms somewhat cupped, filled out in the centre with smaller petals; in the older flowers these outer petals become reflexed. It is a distinct and showy variety; but hardly full enough of petals.

VERMIN IN HOTHOUSES.—Most people are aware that woodlice, earwigs, slugs, &c., are very destructive in hothouses. A visitor to Mr. Van Houtte's establishment, at Ghent, recently noticed his freedom from these pests, and on inquiry as to the means employed to keep the plants free, his attention was directed to a pretty lizard which basked its scales in a sunbeam, to some Carabi aurati which ran with agility among the pots, and to several of those innocent blindworms against which the peasants in their ignorance wage such dreadful war. The mystery was cleared up; two or three blindworms, as many lizards, several carabi — and there is no more harm to befeared from these pests in our hothouses.

TO COOK VEGETABLE MARROW.—Have a gallon saucepan more than half full of boiling water: one minute before putting in the marrow, throw in a tea-spoonful of salt, and half a one of carbonate of soda. Cut the marrow into four parts lengthways, always without peeling it; if small, they need only be halved; if large, divide each quarter transversely. Put them quickly into the water, keeping it rapidly boiling all the time; they will take from a quarter to half an hour, according to age and kind. While the marrow is boiling, make about a third of a pint of melted butter, and a round of toast; cut off the crust, dip the toast in the water they are boiling in, lay it in the dish, and pepper it slightly. When the marrow is done, take it up carefully with a fish slice, lay it on the toast, pepper it well, and pour the butter over it. It should be served up as hot as possible. Prepared thus it is delicious.



MESEMBRYANTHEMUM PYROPÆUM.

(Haworth.)

WHEAT-LEAVED FIG-MARIGOLD.

There are certain succulent annual and biennial plants, whose flowers during hot bright summers light up the flower-garden with dazzling brilliancy in the clear sunny portions of the day. As summer ornaments of the greenhouse also, these plants are always welcome, their beauty in this case, likewise, being principally developed under the direct influence of the sun. The various species of Portulaca, of Calandrinia, and the annual kinds of Mesembryanthemum serve as illustrations of the class of plants now alluded to.

Among these, the *Mesembryanthemum pyropæum*, represented at the head of this article, holds no mean position. Under fitting circumstances it developes a large proportion of floral beauty; and though but an annual plant, and consequently of limited duration in a florescent state, compared with some perennial kinds, it is well worthy of cultivation, as it may be easily raised from seeds, and with but little difficulty a succession of lively blossom can be kept up through as much of the summer as may be desirable.

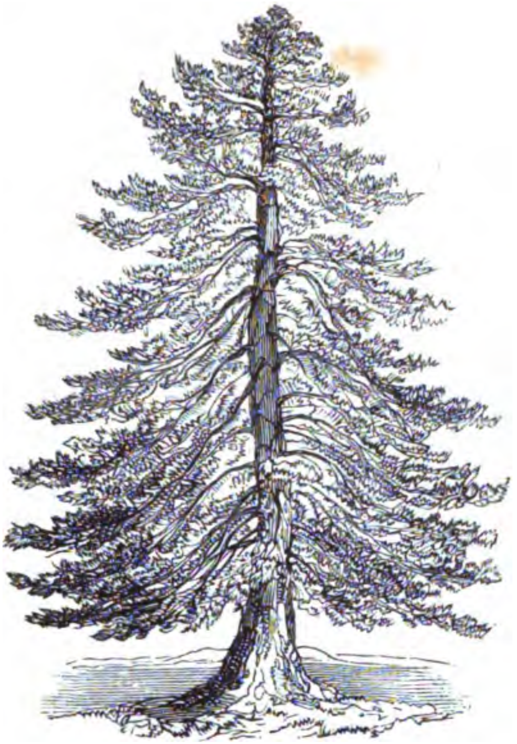
The engraving represents the low tufted habit of the plant. Its entire height is not more than three or four inches, and individual plants do not often extend beyond six or eight inches in diameter, and are frequently of much less size, this of course depending altogether on the degree of vigour imparted to their constitution. The leaves are succulent or fleshy, rough with transparent warty excrescences, and of a linear obtuse half-terete form. The flowers are about an inch in diameter, and are formed of numerous narrow linear petals, blunt at the point, and arranged in a ray-like form around a centre of dark purple anthers; they are not quite so evenly formed, however, as represented in the engraving; their colour is a lively rosy purple, white at the base, with a polished glittering surface, which adds greatly to the brilliant effect produced by the plants when in blossom. There are two other forms, one with purplish, the other with white flowers. The species, which also sometimes bears the name of *M. tricolor*, ranks as a half-hardy annual, and, as such, is usually sown in pots, and when intended for the flower garden, planted out in spring along with other "bedding out" subjects. It has, however, been recorded to have sprung up from self-sown seeds, and may, therefore, be sown, if required, in the open border.

Nearly the whole genus of Fig-marigolds are inhabitants of the hot arid tracts of the Cape of Good Hope, whence also *Mesembryanthemum pyropæum* is derived. It is recorded as having been introduced about 1820, but is not even now commonly known. In the natural system of classification the genus is made the type of an order, to which the name of Mesembryaceæ has been applied. The genus contains upwards of three hundred recorded species, many of them plants of great beauty, and all of very easy culture.

When intended for pot culture, in order to decorate the greenhouse during the summer months, the plants should be sown along with and receive the same kind of treatment as the other annual plants used for this purpose. Thus plants raised in March will be now (August) gaily adorned with their radiant flowers. There may be some readers, however, who are unfamiliar with the routine followed in rearing annuals for summer decoration, and to such a brief sketch of the details will be useful :—The seeds should be sown in well-drained light sandy soil, in shallow pots or pans, and these latter plunged in a gentle hotbed until the seeds germinate: being small, the seeds should not have more soil—which must be fine—covered over them than would equal the thickness of a shilling. For early blooming a few seeds may be sown in February, but for the principal set of plants the middle of March will be early enough, and for a later autumn supply, others may be sown in the middle of April. Seed-pots should not be often watered, nor must they be suffered to become dry ; of course, in the earlier parts of the season, the moisture of a hotbed would prevent them from drying rapidly, but this is not the case later in the season, when the sun becomes powerful : a very good plan to retain the necessary moisture, is to prevent rapid evaporation, by placing a layer of loose damp moss on the surface ; and this moss may be removed occasionally—daily, if necessary,—and damped, and then again returned. Coverings of this kind must, of course, be removed when the seeds begin to vegetate, and from this time the necessary moisture must be kept up by applications from a fine-rosed watering-pot, the water being always used in a tepid state. When the plants have formed two or three leaves, they may then be transplanted, either singly into small pots, or three at equal distances near the edge of a five-inch one, a light sandy soil being used. The plants must then be allowed to become established in the same temperature as they had been formerly grown ; and after this may be removed to a cooler frame, where they may receive rather more air, to prevent them from becoming weak and spindly ; or, if the season be advanced, they may be at once placed on the shelves of the greenhouse : in either case, however, they must have all the sun and light possible, and must be sparingly, though carefully and sufficiently, watered. As they grow they may have larger pots, but never require them of very large size : for the single plants six-inch pots will suffice ; and the next larger size will be proper for those planted three together. At this final shifting they should receive richer and more holding soil than before ; a compost of equal parts light turfy loam, and well decayed leaf mould—that is, soil formed of rotted tree leaves—mixed with a portion, more or less, of sand, to render it porous, and prevent its running together from repeated waterings, will form a suitable medium for their roots. In other respects, they need little attention beyond keeping them in a light sunny position, and supplying them, as they require, with libations of pure soft tepid water.

When plants are required for the flower-garden, the seed should be sown in a similar way about the end of March ; in this case, also, the young plants should be transplanted, and it is best to have them all singly in small pots, as this admits of a more satisfactory arrangement of them in planting out. They must be well established in their pots, and then well hardened in cool and cold frames progressively, so that about the end of May, or as soon as danger of frosts is past, they may be inured to full exposure : they are then to be turned out of the pots into the situations assigned, just as is done in the case of other plants raised in a similar way. A warm sunny spot must be chosen for them, or their beauty will not be developed ; nothing is better than a slope facing the south, and well sheltered on other sides. They look extremely well in small beds, or as edgings to larger ones, and also among rock-work if the surface is not too rugged, for being but of small stature they are, in the case alluded to, too much hidden from view. Those who have not the convenience necessary thus to raise the plant, may grow it to almost—perhaps quite—as perfect a condition, by depositing the seeds at once in the soil of the flower-garden, in the positions where the plants are required to bloom. They will not transplant well from one part of the open garden to another, unless when very young, and they are then liable to many casualties if disturbed, so that it is best to sow the seeds where the plants are required ; only the warmest, dry, well drained spots must be selected ; and some attention should be given to render the soil fine, and to make it lie even about the seeds. The degree of success attained will depend on the character of the season.

Seeds may in general be obtained of the dealers, but in the case of delicate subjects, such as the present, it is desirable to make certain of one's own supply, as well also sometimes to obtain the means of supplying others. For seed-bearing it is best to select a few plants, and pot them as already explained, and then to place them for the summer in a frame, where they may have a free circulation of air, protection from rains, and exposure to light and sun heat. About half a dozen, or half a score of the seed vessels may be allowed to grow, and then the remainder of the flowers produced must be kept picked off. The retained capsules will give a supply of seed, which, when ripe, must be carefully gathered, dried, and preserved.



Picea Pectinata.

CONIFERÆ.—THE PICEA, OR SILVER FIR.

PICEA, *D. Don* (the Silver Fir).—Derived from *pix*, in allusion to the pitch which the trees produce. Evergreen trees.

Picea pectinata, Don (comb-leaved Silver Fir).—Leaves nearly flat, disposed in rows like the teeth of a comb, solitary, turned up at the points, on the upper side dark green, with two silvery lines underneath, whence the name of Silver fir. Cones large, cylindrical, erect, six to eight inches long, with blunt closely-pressed scales of a brown colour when ripe.

An erect growing noble tree, scattered over a great many countries, and long since praised by the prince of Latin poets for its unequalled beauty. It fills some of the forests of the Alps, the Carpathian mountains, the South of Germany, the Uralian, Altaic, and Baikal mountains, and may be considered to be indigenous to the mountains of Central Europe, and those of the west and north of Asia. It assumes its most majestic appearance in Italy, in Germany, and especially in the neighbourhood of Strasburg, on low, deep, loamy lands, near to the Rhine. It is not to be found naturally in Scotland, and there is very little ground for supposing that it is a native plant in England. Its most celebrated locality is that of Olympus, the trees of this species contributing to form the noble woods by which that famous seat of the gods is surrounded.

The silver fir has been planted in considerable numbers around gentlemen's seats, and it will be generally observed in such situations towering above all other trees. When young, the tree is an exceedingly slow grower, often losing its leading bud from the effects of spring frost. In their young state the plants grow much better in Scotland than in England, and perhaps this is to be accounted for by the fact that there, when the tree is excited by fine weather to put forth its tender shoots, nipping frosts are by no means so common as in England, or, in other words, the climate is not so uncertain as it is in the latter country.

Its love for deep loamy soil has very much operated against its being planted in this country in greater numbers; for the land which suits it best is more profitably employed in growing corn crops, &c. Nevertheless, in all places where ornament is required it will continue to offer many attractions over some other evergreens. After it has attained to the age of ten or twelve years, it commences to grow rapidly, making annual shoots of from two feet to three feet in one season.

Virgil was right in ascribing to it the attribute of beauty. It has nothing of the tortuous ramification which forms the delight of the painter, nor is it calculated to elevate the mind when the winds are high, or during a storm: we hear not the shouting of the tempest in its lofty top. In the oak, for instance, the voice of Nature is loud and deep; but in all the individuals of the Coniferæ there is only a shrill, hissing sound, which in minds attuned to such things, awakens a feeling of extreme solitariness. Its leaves are full of beauty, and will suffer the minutest examination; its branches are disposed horizontally, and sometimes may be observed at a great distance, and to advantage, against a clear sky. The trunk is straight and unbending, rising to a majestic height, and the tree altogether may be justly considered as one of those which adds dignity to the spot where it rises.

The propagation and culture of this plant are accomplished much in the same way as in the common pine. The cones should be gathered in December, subjected to a very slight degree of kiln-drying, and then thrashed on a floor, as recommended in the case of the larch in a succeeding page. When sifted, and freed as much as possible from the broken pieces of the cones, &c., they should be kept in a dry place till the middle of March, and sown in beds of light loamy soil, placing the seeds so as that the plants may rise at about an inch apart from each other; and this will be best insured by reckoning one seed out of every four as likely to vegetate.

This, perhaps, will be better understood when it is stated that Silver fir seed is always bad, and requires to be sown very thick, in order to have a good close crop. In moist soil, a covering of half an inch will be sufficient, and in dry soils it may be increased to three-quarters of an inch, and even one inch. When the plants have been two years in the seed-bed, they may be transplanted into nursery lines, *in the very richest soil that can be had*, only it is not proper to use fresh manure. They should stand about two inches apart, in lines six inches asunder; for, if planted at a greater distance apart, they will be found to make strong side branches, often robbing the leading shoot, which is, besides, very liable to injury by frost. It will be found worth while to insert dead branches (cut in summer, so as to retain their leaves,) throughout the lines: this will ward off the effects of spring frosts, and will be found to answer better than planting them under old trees, as is done in several nurseries in Surrey. Two years' seedlings are 10*s*. per 1,000, and transplanted plants, nine inches high, are from 15*s*. to 20*s*. per 1,000. Amongst the synonymes which are applied to this plant are *P. taxifolia* and *P. excelsa*.

There are two *varieties*, one with twisted branches, called *tortuosa*, which, amongst painters, would be considered as preferable to the species; and another with variegated leaves, which cannot be depended upon as remaining true. There are plants of the former in the Exotic Nursery of Mr. Knight, and in Messrs. Loddiges' Arboretum, Hackney.

Picea Nordmanniana, Loudon (Nordmann's Silver Fir). — Leaves broad-linear, obtuse, solitary, curved upwards, of unusual length, and of a silvery hue. Cones large, erect, ovate, growing either separately or in twos or threes, resinous, with obtuse scales, having obcordate reflexed bracts; the seeds have a broad oblique wing.

A noble tree, growing from eighty to a hundred feet high, with smooth bark, and densely formed branches, the lower ones horizontal, the upper ones springing at a more acute angle. It is found in the north of Asia, at a considerable elevation (6,000 feet), and there is therefore no doubt as to its hardiness in this country; but it has not been long introduced, and consequently the plants are but small. The leaves resemble those of *P. grandis*. It is a finer tree than the common Silver fir; its silvery foliage and abundant cones giving it a distinctive appearance. When full grown it is said that the whole crown of the trees, for a fourth of their height, is covered with the cones. It was first met with by Professor Nordmann on the summit of a mountain called Adshar. Being rare, it yet bears a high price.

Picea cephalonica, Loudon (Cephalonian Silver Fir).—Leaves almost flat, shining, dark green on the upper side, with two obscure silvery lines underneath, almost sessile, dagger-shaped, somewhat resembling those of *Araucaria braziliensis*. Cones erect, from six to eight inches long, slightly tapering, and about an inch and a half in diameter, with scales a good deal like those of *P. pectinata*.

A fine tree, sixty feet high, introduced by General C. J. Napier, about the year 1824. Minutely considered, it has some resemblance to an Araucaria. Its general outline is like the Cedar, dense and spreading. It belongs to the Black Mountain of Cephalonia, or to what was, in classic times, Mount Ænos, now Eno, and skirted Hebrus as it rolled towards the Ægean over golden sands! The ridge of mountains on which this tree grows is nearly 5,000 feet above the sea, and about fourteen miles in length, lying in the direction of north-west and south-east. In Napier's *Colonies*, it is stated that a great part of this forest was burned down, but that it is still extensive, though materially injured by the goats, which are allowed to range at pleasure amongst the trees, biting off the leading shoots of the young ones. The same author states that when Count Mataxa, one of the nobles of the island, was presented to Napoleon, the emperor's first question was about the forest on the Black Mountain; and, indeed, it appears to have formed a subject of the greatest interest to several of the governors.

As a timber tree in this country, every thing known goes to prove that it may turn out to be valuable. There are already many good specimens scattered throughout the country, some of the finest of which are understood to be in the pinetum at Wolterton in Norfolk, Hendon Rectory, and Woburn Abbey. The earnestness with which this plant was made known by the late Mr. Loudon helped considerably to its introduction in pinetums and plantations: in his opinion, it forms "one of the most interesting and beautiful of the Abietinæ," and is in every way as worthy of being planted as an ornamental object as the Cedar of Lebanon. Plants are now within the reach of all, fine ones being only 2*s.* each.

Picea Pichta, Loudon (Pitch Silver Fir). —Leaves short, thickly set, solitary, dark green. Cones erect, cylindrical, with entire cuneate-obovate scales, rounded at the apex.

A variation only of *P. pectinata,* under which species it should have been treated. This variety is found in the forests on the Altaic Mountains, about 4,000 feet above the sea. It has been cultivated in the nurseries as a distinct species since 1820, and is even now sold at the rate of 2*s.* 6*d.* per plant. Lambert, Don, and others, recognise it only as the common silver fir. A specimen plant stands in the arboretum of the London Horticultural Society.

Picea balsamea, Loudon (Balm of Gilead Fir).—Leaves rather flat, curved to the upper side, solitary, silvery beneath, and on the upper side of a bright dark green, nearly an inch in length. Cones erect, oblong, cylindrical, of a purplish colour, with rounded undivided scales, the cone about four inches long.

Found, in an isolated state, in the colder parts of the United States, along with the black spruce, and deriving its name from a resemblance which its resin has to the *Canada balsam,* or *Balm of Gilead* of the shops. It is a slender, short-lived tree, remarkably beautiful when young, but fit only to be associated with shrubs and the smallest description of trees. It grows better in Scotland than in England, and in both countries prefers a deep sandy loam on the acclivity, or at the base of a hill. In its outline it resembles the Silver fir, but is by no means so apt to expend its strength in furnishing thick side branches; nor is it so apt to lose its leading shoot. Its seeds, which are produced in this country, are treated in the same way as those of the Silver fir; and in the nurseries, two years old plants may be had at about 7*s.* 6*d.* per 1,000. On no account whatever should the young trees be subjected to pruning. The finest trees in England are at Woburn Abbey; and at Syon and Chiswick Villa are specimens of about forty feet in height, beyond which altitude they rarely grow, even in their native abodes.

Varieties.—There are two varieties in cultivation, one called *prostrata,* of a bushy stunted habit; and the other *longifolia,* with long leaves and upright spray. Both these varieties are cultivated in Knight's Exotic Nursery.

Picea Fraserii, Loudon (Fraser's Silver Fir).—Leaves like the foregoing, linear, somewhat silvery underneath. Cones oblong, with a thick footstalk, squarrose. Bracteoles leafy and reflexed.

A tree found on the mountains of Pennsylvania and Carolina, and introduced into this country by Mr. Fraser in 1811. Were it not for its cones, which are so much unlike those of *P. balsamea,* it might be classed as a variety of the latter tree. This distinctive difference, however, entitles it to be considered as a species. Mr. Lambert represents this tree as little better than a shrub, suited only to lawns and pleasure grounds, in situations where it is wanted to break particular lines, but not to interrupt the view. This estimate of its character is rather too humble, for in situations where the soil is favourable (a sandy loam), it grows with considerable vigour, making shoots of from one foot to eighteen inches in a season. In the climate of Scotland this plant is quite at home, and is there reported as making "annual shoots averaging fifteen inches. Whatever it may be as a timber tree, we do not regard it as more ornamental than the common Silver fir. The plants are perfectly hardy, having stood for several winters quite unprotected." The original tree is in the Hammersmith nursery; young plants may be had at 3*s.* 6*d.* each (1846).

Picea grandis, Loudon (great Californian Silver Fir).—Leaves long, flat, narrow, green and shining on the upper, and silvery on the under side, blunt, and somewhat spreading. Cones erect, oblong, resembling in shape those of *P. Webbiana,* though smaller, six inches long, with broad entire scales of a chestnut brown colour.

A noble object, from North-west America, somewhat akin to *P. balsamea,* but far outstripping that tree, and many others, in stateliness. It was found by Douglas, and introduced by him in 1831. Its favourite seats are moist valleys, which it fills up with beautiful verdant piles, many of which are 200 feet high. The inferior quality of its wood is amply compensated for by its great height and rich garb of green. What would Xerxes have said of such majestic objects? However, we need no princes or sages of antiquity to awaken in us a due estimate of the overpowering grandeur of these works of the Almighty. There is a specimen in the garden of the Horticultural Society; and though somewhat scarce in the nurseries, it is to be had at Loddiges' and Knight's at 5*s.* each (1846).

Picea amabilis, Loudon (lovely Silver Fir). —Leaves entire, flat, somewhat rounded at the apex, one and a quarter inch in length. Cones of a very regular shape, cylindrical, with short pointed bracteoles. Scales of a triangular shape, the upper side rounded, 1¼ inch broad, and the same in length.

A beautiful and majestic tree, nearly allied to *P. grandis*, introduced by Douglas in 1831. A good many plants were raised in the Chiswick Garden and distributed to the members, so that the plant is found in many pinetums throughout the country. There are fine trees at Dropmore, Elvaston Castle, and in the Chiswick arboretum. Plants are 21*s.* each (1846).

Picea nobilis, Loudon (noble Silver Fir). —Leaves almost all turned one way, thickly set on the branches, short, sharp, with a faint silvery colour underneath. Cones erect, cylindrical, seven inches long, with imbricated bracteoles. Seed very small, measuring, with the wing, one and quarter inch in length.

A majestic tree, discovered and introduced by Douglas, in 1831, forming extensive forests upon the mountains of Northern California, where it is said to produce timber of excellent quality. This is the tree which, above all others, awakened the admiration of Douglas. "I spent," he says, "three weeks in a forest composed of this tree, and, day by day, could not cease to admire it." Judging from the young trees at Belsay, Flitwick, and Hendon, it is likely to excite similar admiration in the less congenial climate of this country; and it is not improbable that, at some future day, it will exhibit the beautiful and useful in a very eminent degree. Plants are 25*s.* each (1846).

Picea religiosa, Loudon (sacred Mexican Silver Fir.)—Leaves linear acute, entire, somewhat pectinate, or comb-like, 1½ inch in length. Cones roundish-oval, nearly 3 inches long, and 2½ inches broad; they very much resemble those of the Cedar of Lebanon, but are smaller.

A large growing tree, believed to be quite hardy in Britain. In a wild state, it grows from 100 to 150 feet in height, with a trunk 5 or 6 feet in diameter. A native of Mexico, on the mountains of Anganguco, 8,000 or 9,000 feet above the sea. It was introduced in 1839, by Mr. Hartweg, to the Horticultural Society of London. Like the Deodar among the Hindoos, this tree is greatly reverenced throughout Mexico, where branches of it are used in decorating the churches. Plants, 18 inches high, are from 30*s.* to 42*s.* each (1846).

Picea Webbiana, Loudon (Webb's Silver Fir.)—Leaves linear, flat, two-rowed, crowded, smooth, shining, silvery beneath. Cones solitary, erect, 5 to 6 inches long, oblong, of an intense purple colour when ripe, but after being detached from the tree for some months, resembling in hue those of the Cedar of Lebanon, though somewhat darker.

A fine tree, a native of the Alps of Gossainthan, and of the Himalayan mountains, where it was discovered by Captain W. S. Webb, and introduced into this country by Dr. Wallich, in 1822. It has a regular, majestic outline, which would indicate a loftier growth than it attains to even on its native hills, where it rises to the height only of 80 or 90 feet. The branches, like those of the silver fir, are disposed in whorls, though less regular than in that tree; the leaves are very thickly set, and its whole appearance entitles it to be considered as eminently beautiful. No decided opinion can be yet given of its use in this country as a timber tree: it suffers considerably from spring frosts, and, on that account often changes its leading shoot. Recent experiments, however, justify its being recommended in sheltered situations near to the sea, where the effect of frost is neutralized. In Scotland, too, it has a better chance of succeeding than in England; and, indeed, throughout Britain, there is a source of hope regarding it, after it has become naturalized.

Like the silver fir, it produces a great many *bad* seeds, and, on this account, it is scarcely worth while to send home the seeds in the cones. They should be extracted, and the good or plump ones selected and forwarded by the Overland route. Those who have friends in India, who are in the practice of sending cones to England, should be instructed to be very careful in getting those only of the current year's growth and from the trees; for a great proportion of cones which reach Britain are evidently those which have fallen off prematurely, or are old ones gathered under the trees. Of all the countries under heaven, India is, perhaps, the *slowest*, and the natives are ever ready with an excuse to obviate the trouble of ascending a tree. The seeds should be sown in the first week of April, *in the open air*, like those of the common pines, and treated in every respect like the Scotch fir or larch. One year seedling plants are 12*s.* per dozen; and those 18 inches high, in pots, are from 7*s.* 6*d.* to 10*s.* each (1846).

Picea Pindrow, Loudon (Pindrow, or tooth-leaved Silver Fir.)—Leaves in two rows, or nearly so, flat, and nearly of the same colour on both sides, bidentate at the apex, from 2 to 3 inches long, having an elevated midrib. Cones erect, solitary, 5 inches long, of an oval obtuse form, and a greyish brown colour.

A tree, growing to the height of 90 and 100 feet, a native of the Himalayas, where it assumes the character, in some measure, of the Cedar of Lebanon, having stouter and more roaming branches than any other individual of the genus. In this respect it will find favour in the eyes of those who prefer *picturesque* growing trees, to those which are regular and pyramidal in their outline. The tree is not unfrequently confounded with *P. Webbiana,* but it may be easily distinguished from the latter by its longer leaves, and by its cones, which are shorter and thicker. There is a good specimen in the arboretum of the Horticultural Society. One year seedling plants are 15*s.* per dozen; and those which are 15 inches high, are 21*s.* each (1846).

Picea bracteata, Loudon (leafy-bracted Silver Fir.)—Leaves linear, two-rowed, flat, silvery beneath, two inches long, light green, and shining on the upper surface. Cones ovate, four inches long, solitary, almost sessile, erect.

A high slender tree, discovered by Douglas, on the high mountains of Colombia, and not growing at a lower elevation than 6,000 feet above the sea. It is a remarkable feature, that a tree affecting such an altitude should be so entirely devoid of that sturdiness peculiar to almost all other mountain trees; its height being 120 feet, and the diameter of the stem at bottom only 15 inches. This fir will, no doubt, prove hardy in Britain, and produce valuable timber for some purposes. It is not yet, as far as we are aware, to be had in the nurseries of this country.

Picea Pinsapo, Loudon (Mount Atlas Cedar, or Pinsapo Silver Fir.)—Leaves scattered, thick and fleshy at base, and tapering to a sharp point, dagger-shaped. Cones ovate, with bracts much shorter than the scales.

A small tree very much resembling, in general appearance, *P. balsamea,* but by some regarded as a variety of *P. pectinata.* A remarkably slow growing plant when young, and not likely to prove otherwise than ornamental in this country. A specimen, 18 inches high, stands in the arboretum of Mr. Mackie, Norwich. Plants, one foot high, are 12*s.* per dozen (1846).

There are small plants of the following kinds in cultivation, but they are yet hardly enough advanced either to test if they are identical with other kinds already in cultivation, or possessed of any peculiar characteristics:—*P. Hudsonii,* a very dwarf growing and small-leaved Silver Fir, the origin of which is unknown, price 15*s.* to 21*s.* each (1846). *P. hybrida,* a variety obtained in this country from Germany, slightly resembling *P. Pichta* in the colour of its foliage. Probably, these will prove to be merely varieties of the common kind: both are in the collection of Messrs. Knight and Perry, of Chelsea. *P. dumosa,* represented to be hardy, cultivated by Messrs. Lawson and Son, and offered at 15*s.* each (1846). *P. monstrosa,* grown in the Exotic Nursery, King's Road: but Mr. Knight expresses considerable doubt concerning it.

CONIFERÆ.—THE LARIX, OR LARCH TREE.

LARIX, Tournefort (the Larch), derived from the Celtic *lar,* fat, in allusion to its resinous exudation; or, as others suppose, from the word *L'aris,* the Berber name of a coniferous tree, found in Rif, and throughout the higher Sierras of Marocco. Deciduous trees.

Larix europæa, Decandolle (European or common Larch.)—Leaves clustered, very soft, deciduous, rounded at the points, light green. Cones ovate-oblong, erect, one inch in length, of a dark brown colour when ripe.

A well-known deciduous tree, with graceful pendent branches, naturally affecting cold and elevated tracts of country, and when clad in its summer dress, considered to be an elegant object. In Alpine scenery, it is, perhaps, the greatest of all trees. The most romantic and asonishing scenes in nature are clothed with it. In Italy, Switzerland, France, and Germany, it rises on mountains of uncommon height; and is found in greatest perfection growing in the neighbourhood of cataracts, avalanches, and ravines. Even beside the icy glaciers of Savoy, where general vegetation never assumes its sway, some scattered specimens of it may be seen skirting the outlines of that wondrous and appalling picture. On the Alps and Appenines, and generally over those countries where it is indigenous, it is found at a great height. The traveller, whilst journeying over the western and northern districts of Scotland, may observe it, though not growing spontaneously, in similar situations, filling the straths with heavy timber, and ascending the mountains until it has attained an altitude too cold for it to live in. Those heights, it is true, are few in number; for modern enterprise and ingenuity, by a simple process of intermixing the plants of the common pine with this tree, have succeeded in casting over the most sterile and exposed situations a lasting

Larix europæa.

and profitable vegetation. In summer time, it is delightful to witness the lively grassy-green hue of this tree, contrasted with the expanses of iron-coloured heath, which may be generally seen associated with it, and which apparently bid defiance to the inroads of the cultivator.

Excepting the oak, and Scotch pine, no tree suited to the climate of Britain has proved itself of more general use. It is a fast growing tree, not scrupulous as to where it is situated, and, though soon attaining to maturity, its wood is strong, tough, and imperishable. Hence it is found to be a good substitute for the oak in ship-building. Throughout the sea-port towns of Russia, it is in constant demand, for the purpose of constructing line-of-battle ships ; and during the last twenty years, it has been frequently used in Scotland, in the building of brigs and frigates. It has been found to resist the effects of the extreme changes of climate, and, that most trying of all tests—the alternate exposure to air and water. It is found, again, to be of great service in the formation of railways, as supports to the rails, and as wood pavement, the former purpose being likely to absorb almost all the full-grown trees now existing in this country. In a smaller way, it is used for scaffolding-poles, ladders, pipes, shingles to cover the roofs of houses, vine props, posts for fencing, beams, lintels, joists, mill axles, and as hop-poles.

But, whilst it is preparing itself for such useful purposes in commerce, &c., the great work which it accomplishes as a fertilizer of waste land, renders it an object particularly worthy of being introduced in all barren and unprofitable districts. That a tree should thus carry fertility along with it, and that at the same time there should be still so much space throughout Britain, upon which it is not allowed to operate, can be only accounted for by the fact, that its effects in this respect are not generally known. Be this as it may, we know from experience, that a better agent for subjugating tracts of heath land cannot be. When planted, so as that the branches touch one another, the air during summer is excluded to that degree, that the heath, and whatever coarse herbage may be upon the land is destroyed ; and when the trees are thinned, so as to admit sufficient air to the surface, it is soon clad with certain species of delicate grasses, known to botanists as of the genera *Festuca*, *Cynosurus*, *Agrostis*, *Poa*, &c. This fact was first noted and acted upon by the Duke of Athol ; but the practice has since been improved by Mr. Gorrie, of Annat Gardens, Perthshire, who, with his relative, Mr. A. Gorrie, of Holkham, stand pre-eminent as individuals who have paid the closest practical attention to the Larch in all its bearings. The former gentleman recommends the seeds of *Poa nemoralis* to be scattered over the ground after removing the first thinnings, as that grass, he says, "wonderfully improves the pasturage."

Pictorially considered, the Larch is deficient. It is without grandeur ; and though it may be seen occasionally assuming an irregular and even noble outline, such a character belongs not to the species. It will, however, continue to be a favourite with many on account of its tender green verdure in April and May, and the beauty of its catkins. It is one of the first to awake at the call of spring; and that circumstance alone will always ensure for it a favourable notice. The whole sum of it is this:—could it be removed out of sight in June, it would form during the two preceding months a most lovely lawn ornament; but, taken altogether, it is much more useful than ornamental, and fit only for far-off scenes, in poor soils, where alone it can be profitably employed.

The rearing of the Larch is in many respects similar to that of the common Scotch pine. The cones are fit to be gathered in the month of December, and many are the plans adopted to get at the seeds which they contain. Boring them with a gimlet, and splitting them with an awl, practices which are adopted by some, are tedious and tiresome operations scarcely worthy of notice. The proper way is to lay them upon wood in a kiln, for twelve or fifteen hours, turning them over three times during the day, and subjecting them to heat, not exceeding 110 degrees Fahr. The cones will not expand so as to let the seeds fall out, as in the case of the Scotch pine, but the heat will render them much easier to break. They should then be laid in a thick ridge upon an uneven stone floor, resembling causeway, and beat to pieces with a flail. All those who know any thing of the operation of threshing these cones, will readily sanction the statement that it forms the hardest of all manual labour. Care should be taken to keep the cones thick enough upon the floor to protect the seeds from the stroke of the flail; and when this is done, it is surprising how few of them are bruised. Every two or three hours the cones should be sifted, and laid down afresh to undergo the operation as before; and so on till all the seeds are extracted. It will be found impossible to separate the seeds from the broken pieces of cones by any process of winnowing, the latter being of the same size and weight as the former: hence it is, that pure and unmixed seed, in any large quantity, cannot be procured.

The time for sowing the seed is about the end of April: in Scotland, where spring frosts might prove hurtful, it is deferred till the second week in May; and the operation is *in all respects* the same as that adopted for the common pine. The soil should, if possible, be light and friable, such as will not get crusted after rain; and, for the convenience of weeding the beds, they should not exceed 4½ feet in width. In those beds, the plants may remain either one or two years according to their size: a luxuriant crop, or such of the plants as have made a good growth, will be fit for transplanting into nursery lines at the end of the first season; but in many cases, they are allowed to remain till they have completed their second season. When two years old, the plants are fit to take their station whereever they are to remain, if the heath or herbage should be short and meagre; but in all cases where the surface is matted, or much shaded, plants from nursery lines, of a larger size, should be used. In the event of a good close crop, the plan which is generally adopted is to weed out all the largest of the plants the first autumn or spring after sowing, leaving the remainder for a crop of two years' seedlings; and the advantages of this process are, that the plants may be sold or used twelve months sooner than those which remain; and that those which are yet in the beds run no risk of being drawn up or choked by being too thick.

There are two ways of planting the Larch, namely, by *pitting* them, and planting them with the *hand iron*. The former plan is adopted in plantations of limited extent, where large, and consequently, bushy-rooted plants are required; and consists simply of small pits, eighteen inches deep, being made with the common garden spade. The other is the most expeditious yet in practice, and is but indifferently understood in England. It is applicable to all waste lands where the surfaee is bare, or partially so, and is performed by making a cut in the ground with a small spade worked by the right hand; whilst the left is employed in inserting the plant, which is firmly fastened in its position by treading with the heel. (See *Annals of Horticulture*, 1845, p. 188.)

Strictly speaking, this tree requires no pruning: the stem should of course be cleared of all the under branches as they become decayed, but not until they are so useless as sap agents, that there can be no fear of the tree bleeding at the parts where the branches are detached. The time for felling is winter; and as the roots make excellent fuel, it is recommended that they should be either removed with the stem, or afterwards dug up.

By far the most important point connected with the treatment of the Larch is the defect or disease, known as *the rot*, which, as Loudon truly observes, " has baffled every attempt of physiologists and planters to ascertain its cause." He therefore leaves the subject as he found it. The details which have been written concerning the supposed causes of this disease would fill a goodly octavo volume; and as it would be useless to repeat even an abstract of them here (for they lead to no good end), the writer will simply detail the real cause and cure of this most serious evil. Amongst all the opinions delivered, the nearest approach to the truth is that by Mr. Gorrie, and in these words, which are a commentary on Matthews's plan of probing the roots of the Larch, and laying bare those fitted for knees in shipbuilding:—"Cutting the roots of a growing Larch is dangerous, and will inevitably produce rot!"

This, however, as the sequel will show, is short of the real cause. When a Larch plant springs from the seed, it sends down a long tapering or tap root, in shape resembling a carrot or parsnip, so that if a seedling one year old be carefully taken up, it will be found to have a long leading root, furnished all the way with small minute fibres—quite a carrot root in miniature. To say that the part of the plant at the surface of the soil, and the whole length of the top must have the closest connexion and sympathy with the root just described, is only repeating what every one must see to be indisputable. Well, this plant is taken up, its root shortened with the pruning knife to within a few inches of the stem, or if not touched with the knife, it is otherwise compelled by frequent transplantation *to give up its tap root.* It strives to regain it; but no: the tree is removed again, and after many shiftings, all trace of the leading root is lost; and in the language of nurserymen, it is at last furnished with "fine fibrous or matted roots." The tiny seedling commenced with a good foundation: the first thing it did was to send its root deep into the soil—a root of iron—the same rigidity of fibre pervading its upward growth. Now, will any one say, that at the end of four or five years after its many shiftings, this hardy constitution has not suffered violence? The heart of the stem, during its first year's growth, was formed and fostered by the tap root; and when that is lost, it is only natural to conclude that the centre should, in many instances, decay also. It will scarcely do to say that the side or fibrous roots will administer the same nourishment to the tree, inasmuch as the infant stem was part and parcel of the tap root, which, under the common process, the plant is compelled to relinquish. It is true, the common mass of fibrous roots will support the plant, which, in all appearances, flourishes as before: they perform their office, but they nourish only a living sepulchre, worthless for aught, except shelter and show.

Where is the analogy to all this? Why, experience teaches us that frequent transplantation has a tendency to subdue and soften the rigidity of fibre, which all young trees possess: in the case of the crab tree, it lessens the sharpness and sourness of its fruit; and it is well known that in Spain and Portugal, where large plantations of the chestnut are made, the practice of frequently shifting the trees is resorted to, for the purposes both of checking their growth, and freeing the nuts from that woody taste which they otherwise have. It ameliorates and subdues the wildness of their native character, and it must have a corresponding effect on the texture of their timber. All this, then, is accomplished by the destruction of the main or tap root. A somewhat analogous instance may be drawn from animal physiology. Take the tooth. Physiologists tell us that "hard and resisting as the teeth appear, they are, nevertheless, endowed with the same vital properties as other parts; and the root of each is perforated longitudinally by a small canal, through which the blood-vessels and nerve are admitted into its internal structure. From those blood-vessels the tooth derives its nourishment." The main, or tap root of a tree may, with some propriety, therefore, be considered as the nerve of the plant, which, if damaged, causes that decay which the side roots are insufficient to ward off.

But, lest these analogies should prove to be but fancied ones, let us look only at facts. In the self-sown plantations of Blair, Ballindalloch, Relugas, and Altyre, where the trees were never transplanted, and where the tap root is uninjured, the disease is unknown: and further, so far as I can ascertain, it has not discovered itself in those districts where one and two years seedlings have been used in trenched soil. It appears therefore, that plantations of larches should, if possible, be sown where the plants are intended to remain; that it is better to use one year seedlings than those which are two years old; and again, that two years old plants are to be preferred to those which are taken from nursery lines. It is not intended to be said that every one or two years seedling larch, even in soil which has been loosened to the depth of two feet, will produce a tree free from the rot: such plants may receive injuries which cannot be overcome; and it is equally clear that many of those which have been often shifted may yet retain the original root, or at least the power of forming to themselves new tap roots. Altogether, the subject is important beyond example, and deserves the closest attention. One year seedling plants are 1*s.* 6*d.* per 1000; two years old plants are 3*s.* 6*d.* per 1000; and transplanted plants are from 10*s.* to 20*s.* per 1000 (1846).

Varieties.—These are numerous, and some of them well entitled to be cultivated as curious and ornamental. *L. europæa*, however, is the only one claiming consideration as a timber tree.

L. e. pendula (weeping Larch).—A very distinct variety discovered amongst plants raised from seeds sent from the Tyrol. It is much more robust than the American weeping

Larch, its branches being thicker and longer, and its cones considerably larger. Plants 5 feet high, are 2*s.* 6*d.* each (1846).

L. e. pendula repens.—A variety of the foregoing, with less of the drooping character in it. It is propagated in the London nurseries and sold at 4*s.* per dozen (1846).

L. e. sibirica (Siberian Larch).—A variety sent by Professor Pallas to the Hackney nursery about the beginning of the present century, and since discovered in the Duke of Athol's plantations amongst plants raised from seeds received from Archangel. Hence, in some catalogues, it bears the name of *L. europæa archangelica.* It is common on the sides of the Ural Mountains, and extends northwards through Siberia and Kamtschatka to the Pacific Ocean. In the south of Siberia, it assumes the dimensions of the European tree. In budding and leafing, it is considerably in advance of the common tree, or any other of its varieties; but its catkins do not expand till late in the season. It has been tried in Scotland as a timber tree; but it has with justice given place to *L. europæa,* which grows with greater rapidity, and in a shape infinitely more serviceable as respects its timber. Plants, in pots, are at the high price of 1*s.* each (1846).

L. e. dahurica (Dahurian Larch).—A worthless variety discovered in Dahuria, flat-headed, irregular, and stunted: many of the same sort might be selected from plantations in England. A scrubby, unsightly plant of the same kind stands on the property of Lord Stafford, near Cossey village. Plants are 4*d.* each (1846).

L. e. laxa (loose-headed European Larch). —Not seen by the writer, but described by Lawson as "more horizontal and less crowded in its branches, with a darker green, or somewhat glaucous colour of foliage," than the common tree. Plants, 1½ foot, are 4*s.* per dozen (1846).

L. e. compacta (compact-branched Larch). —A very distinct variety, discovered by Mr. Gorrie of Annat Gardens, a gentleman who has bestowed more attention upon the Larch than any other person in Britain. In habit, this plant is represented as being conical in its outline, like the common larch, with brittle, horizontal branches, erect towards the point. The bark is thick and rugged. Cones nearly as large as those of the common tree, with blunter points, equally persistent, and with scales remarkably smooth. The leaves are of a light grassy-green colour, and so long as they continue fresh, the tree is very ornamental. Of its qualities as a timber tree, no favourable opinion has been hazarded. Plants, 2 feet high, are 4*s.* per dozen (1846).

L. e. intermedia (intermediate Larch), belongs to *L. e. sibirica,* though some botanists think there is an appearance exhibited by it entitling it to be considered distinct. It awakes at the very first approach of spring, and consequently suffers from after frosts. Plants, 2 feet, are 4*s.* per dozen (1846).

Other varieties of the common Larch have been selected by the curious, and even the minute differences in the flowers have given rise to two individuals, namely, *L. e. flore rubro,* with red flowers, and reddish-brown cones; and *L. e. flore alba* with whitish flowers, and cones of a very light colour. *L. e. Killermaniana* is also to be found in catalogues at 7*s.* 6*d.* each.

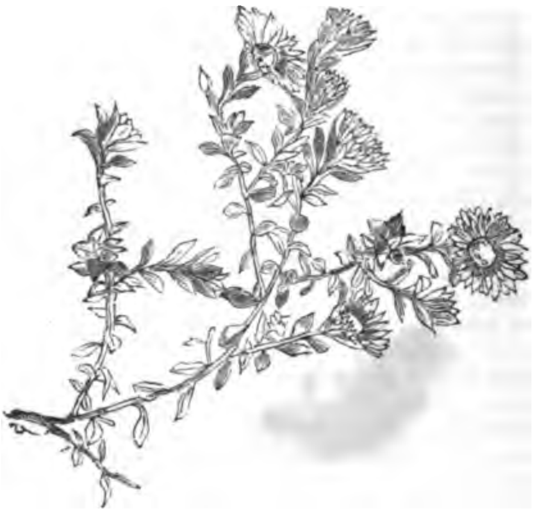
Larix americana, Michaux (American Larch).—Leaves short, clustered, deciduous, flexible. Cones oblong, erect, green in spring time, and becoming brown or violet coloured, from ½in. to ¾in. long, the scales gradually diminishing from the base to the top.

A native of cold mountainous districts in Vermont, New Hampshire, and the district of Maine. Near Lake St. John, and the Lakes of Misstassin, it forms deep and unbroken forests; and its extreme limits, towards the south, are New Jersey and Pennsylvania, where it is only found in the coldest and gloomiest exposures. Again, in Lower Jersey and in the neighbourhood of New York, it is very scarce, and seen occasionally intermingled with the white cedar. When grown in America, the wood is reckoned equal to that of the common larch as grown in this country; but in Britain the American tree does not succeed well, and has fallen into the rank of an ornamental tree only. Plants, 6 feet high, are 1*s.* each (1846).

Varieties. L. a. rubra (red American Larch).—A native of North America, of a middle size, very much resembling in its outline the common European larch, from which, however, it is readily distinguished by its small purplish cones. The tree has a smooth brown bark, with horizontal, or somewhat drooping branches; and the leaves are shorter and narrower than those of the common tree. It has been tried along with other coniferous trees in the plantations at Blair Athol, but found to be remarkably deficient for economical purposes. What little wood it produces, however, is very close-grained and heavy. Plants, 2 feet high, are 1*s.* 6*d.* each (1846).

L. a. pendula (pendulous-branched, or black Larch).—A native of North America, where it grows on mountainous districts where the soil is free, and on low meadow lands, in rich clay, or deep sandy loams. This is the most graceful of all the larches, the leading shoot frequently assuming its pendulous outline at the height of 20 feet from the ground; and as Lindley observes, "it forms a natural arch of great beauty." It is rather singular that this tree, which has been in Britain for upwards of a century, should not be found more frequently in pleasure grounds as an ornamental object. Plants of this variety, 2 feet high, are 2*s.* each (1846).

L. a. prolifera.—A specimen bearing this name stands in the arboretum of the Horticultural Society at Chiswick—no doubt a mere continuation by grafting of some curious monstrosity. The tree which is growing in the Society's Garden is about 20 feet high.



HELICHRYSUM PROSTRATUM.

Dr. J. D. Hooker.

THE PROSTRATE HELICHRYSUM.

One of the plants of which a figure is given in Dr. Hooker's splendid work, the *Flora Antarctica,* is the Helichrysum prostratum, represented in the annexed figure, reduced from the plate given in that work. It is one of the neatest, if not the gayest, of the plants of the Antarctic flora.

It is a graceful and very elegant plant, with decumbent branching stems, small elliptic-obovate, or obovate-spathulate, obtuse, scattered leaves, and flowers of a pure white, or faintly tinged with rose colour, and nearly an inch across. The flowers, it will be seen, grow terminally at the ends of the shoots, and being pretty freely produced, they have a gay appearance. The plant is peculiar among its congeners for its prostrate or decumbent habit, which, however, renders it very suitable for planting on rock-work. The stems are leafy throughout, and irregularly furnished with divaricating branches, which turn upwards at the tips, where they produce their solitary flowers. The leaves, which are from a quarter of an inch to a third of an inch long, are covered beneath with a silvery tomentum, or downy substance, and on the upper surface with scattered silky hairs.

It has been gathered both in Lord Auckland's and in Campbell's Island, in the former confined to rocks at the top of the hills. In the more southern islands, it grows abundantly, trailing over the rocks and banks near the sea. Dr. Dieffenbach found it on Mount Egmont, in the northern part of New Zealand, where it was growing at an altitude of 4,000 feet above the sea. There cannot, therefore, be any doubt of its capacity to bear the cold of the climate of England: some experiments would however be necessary in order to ascertain if the moisture of our climate would destroy it.

This is one of the plants which those who have communications with the countries it inhabits, should endeavour to introduce to this country. Being a composite plant, there is no doubt it produces plenty of seed, by means of which there would be little difficulty in raising it. Obviously, the situation where it would be most appropriately placed, under cultivation, would be where it would be exposed as far as possible to the pure free air. The plant seems to bloom pretty freely, but we have no means yet of determining what would be its flowering season in this country. From its habit, we may judge it to be a plant which would continue a considerable time in bloom. It should be planted in well drained and somewhat sandy soil, containing loam.

THE KITCHEN GARDEN.

Sow borecole, cabbages, cauliflower, carrot, cress, endive, lettuce, Lamb's lettuce, onions, parsley, peas, radishes, rape, red cabbage, salading, spinach, and turnips.

Plant and Transplant balm, borecole, brocoli, cabbage, cauliflower, celery, coleworts, endive, lettuce, and savoy.

General Directions.—Close the general winter cropping, gather in and dry herbs and seeds of all kinds, also onions, shalots, and such like. Hoe and earth up the growing crops, and apply clear liquid manure often: still clear, dig, or trench every empty space, and let it be occupied by some useful vegetable different in constitution from that which grew there before, by which means, none of the ground need be left "fallow," or, in other words, wasted.

Balm may be readily increased by division of the roots; it grows in any common garden soil.

Borecole.—A little seed may now be sown, for very late planting; plant out; hoe amongst the previous planting.

Brocoli.—Plant out such as the Tartarian (late), which will come in next May; also from the other late sorts: give them a fresh, rich, and loamy soil, or dig deep and dung well: prepare for another planting early next month.

Cabbages.—Sow for the principal spring crops, the second week, in an open situation; if very dry weather prevails the seed beds may be watered: each sort should be sown distinct, and labelled accordingly. Plant out a few more any time this month in a rich soil, for coleworts.

Carrots.—To obtain them young, and early in spring, sow this month in a deep, open, and rich soil; choose a calm day for sowing, as the seeds are very light; put them in rows a foot apart.

Cauliflower.—Sow now for the early summer crop; some are particular to a day, and prefer the 24th: give it a good situation and a bed of rich light earth. Attend to the advancing crops in cutting, clearing, and hoeing in time.

Celery.—Continue to plant out for succession: earth up those which require it, observing to keep the earth from the heart, and not to do it too often. Waterings with liquid manure will now be beneficial, but do not saturate the soil.

Coleworts.—Plant out the strongest from the early cabbage beds, at a distance of fourteen inches each way.

Cress.—Sow twice, or oftener, this month, in a shady situation.

Endive.—Sow the first week for a late winter crop: plant out those sown last month, and hoe between those planted early; give all a good situation and a rich open soil.

Herbs of all sorts should be cut on a dry day, and hung up in small bundles, or spread out in an airy place to dry. To secure them in the best state, cut them when the flowers begin to open.

Kidney Beans must be hoed amongst, and the tall sorts staked: the dwarf sorts will be better for being earthed up. Those which are ready for gathering should be taken off, whether required for use or not, as the strength of the plant goes to mature them, if they are left on: it is well to leave a few by and by for seeds.

Leeks.—Hoe amongst these, and draw a little earth about their stems; do not follow the common practice of cutting the leaves.

Lettuce.—Sow about the middle of the month to stand the winter: the Hammersmith, brown Dutch, and brown cos, also the green cos and imperial cabbage, are the best hardy sorts. Plant, or thin out from the late sowings for autumn use.

Lettuce (Lamb's) or corn salad.—Sow this month in very common soil, and rather a shady situation; it will be found useful in winter.

Onions.—Sow the first week for a full winter crop; they must have a rich, deep, and fresh soil, and a good place, and should be sown in drills a foot apart. Watch the progress of the spring crops, and gather and lay them in a dry place (before storing) as they ripen.

Parsley.—A large sowing should be made as early as possible. Thin out the sowings made in June, leaving the most curled plants.

Parsnip.—It will be beneficial to go over them anew, and see that they are not left too thick; suffer no weeds to grow.

Peas.—Discontinue sowing unless it be upon a very warm spot. Stake the advancing crops in time, and top them when about three feet in height: give them thorough waterings as recommended if the weather is dry; also soak the seed in water, before sowing.

Radish.—Sowings for winter or late in autumn should be made about the middle of the month; either the black Spanish or the queen radish are suitable: sow early for succession, and the quicker they grow the more crisp and better they will be.

Rape.—Sow; transplant, if sown last month, about two feet apart; it is very hardy, and forms a substitute for mustard.

Red Cabbage.—Sow beside the others; they need not be transplanted until the spring, as it is not used until the head is large and firm.

Salading, as mustard, &c. must still be sown every fortnight or so; it will keep in use longer if grown in a shady place.

Scarlet Runners.—Allow none of the old pods to remain unless wanted for seed, as they do not then bear half so many fit for using.

Savoy.—It is almost too late to plant out, except in good situations; if done, do it early.

Spinach.—Sow early in rows a foot apart, for a main winter crop; the prickly is best.

Turnip.—Another sowing can still be made; the white stone or a superior early sort is to be preferred: thin out, and hoe, the earlier sowings.

THE FRUIT GARDEN.

General Directions.—Be indefatigable in preserving the ripe and ripening fruit from the attacks of vermin; the net, the bottles, the mats, &c., the watchful eye and ready hand, must all be in active operation, even to the removing of the *causes*, of which perhaps the early and extensive destroying of wasps, nests is not the least effective: dare we say kill the birds also? The training and thinning both of wood and fruit may still be necessary and beneficial. Examine newly budded trees, and perfect the ties when required: also take away all suckers and superfluous shoots that would draw nourishment from the bud.

Apricots.—A few may ripen at the end of the month, and only those must be gathered; avoid touching those which are not ready. Slugs are sometimes troublesome, and must be destroyed at night.

Cherries.—See that the nets used for protecting the fruit from birds are whole: it is not well to gather all at once, but go regularly over, taking only those ripe: when the crop is cleared well wash the trees.

Currants.—About the end of the month, it may be necessary to mat up a few of the best bushes, both for kitchen and dessert use: choose a perfectly dry day, and make the mats quite close; standards, espaliers, or wall-trained trees, are most readily preserved in this way.

Figs.—Remove any crude shoots that may now appear, and use every proper means of ripening the fruit quickly; do not take off many of the leaves, but the wood may be much thinned.

Gooseberries.—Mat up the good keeping sorts, such as the Warrington and Ironmonger; the bushes must be quite dry. It may be necessary to net over the whole, where birds are plentiful.

Nectarines.—Finally thin and nail in the shoots, removing all late growths, and it may be, a few over-strong shoots where too much crowded; this will assist the ripening of the *fruit*, and what is not less important, the ripening of the *wood*.

Peaches.—Treat the same as nectarines. Expose the fruit to the sun; but whilst no leaves must be removed where they will not easily shed, the half of the leaf may be cut away.

Pears.—Again remove the breast-wood and any after-growths or blossoms, so as to conduct all the strength to the fruit and next year's wood. Let none of the leading shoots, especially of young trees, be injured from inattention to nailing, or otherwise securing them ; a windy night might ruin them.

Plums.—These are very unequal in ripening, and require to be often looked over : some will now be required for kitchen use ; these, if taken off with care, may assist those to be kept for dessert.

Raspberries.—The young canes, if strong and likely to suffer from wind, should be tied up : the fruit for preserving must be gathered on a dry day.

Strawberries.—Lay them in pots, if required ; and at an early period cut off the runners, and plant them, if wanted, in nursery beds for new plantations. Those potted early for forcing, should be set in a hot dry place to ripen them.

Vines.—Do not leave a shoot that is not required, and give the bunches and berries a final and good thinning.

THE FORCING GARDEN.

General Directions. — Fire heat may in nearly every case be dispensed with, except in the fruiting pine pit, and in these cases it must be very moderate. Renew linings to hotbeds where required. Continue the routine operations of July.

Cherries.—The house must stand fully open, or if the plants are in pots or tubs, or there is any way of getting them out, it would answer the same end, of resting them, and their place might be filled with growing plants.

Cucumbers. — Temperature from 60 to 90 degrees. Provide now plants for a winter stock ; they may be obtained either by cuttings, layers, or seeds, but will bear soonest from layers. Get suitable soil prepared for them, and placed in readiness where they are to be planted ; there is nothing better than fresh turfy loam, with about a third of leaf-mould. Water the bearing plants with liquid manure, and keep them clean and regularly thinned : fumigate often and shut up early.

Figs.—Temperature from 55 to 75 degrees. Withhold watering entirely ; it may be necessary to sponge over the leaves to kill the red spider. The good forcing sorts should be increased now by cuttings or suckers.

Melons.—Temperature from 65 to 90 degrees. Maintain a brisk heat by means of linings, yet if the sun heat is economized, as it were, by early closing in the day, little or no artificial heat is requisite ; shut up early therefore, but give plenty of air to those ripening. Water only in the mornings, and not over the foliage ; thin the shoots and slightly stir and freshen up the surface of the soil.

Mushrooms.—Temperature from 55 to 60 degrees. Keep the house or cellar, or wherever they are grown, dark. If the early directions were attended to, young mushrooms should soon be making their appearance in the old cucumber or melon beds ; these may still be made available for that end, by taking off the soil all but two inches, thrusting in spawn at six inches apart amongst the dung, shutting up the frame, and shading with mats ; a good crop may thus be expected in due time.

Musas.—Temperature from 65 to 90 degrees. Always maintain plenty of moisture about the growing plants, but keep those whose fruit is ripening, dryish : shift the advancing suckers as their appearance directs ; give a rich loamy soil, and water with liquid manure, when the roots are strong and touching the edges of the tubs.

Nectarines and Peaches. — Temperature from 55 to 80 degrees. The trees in the early houses must be syringed if the least dirty ; keep them exposed, unless the wood requires ripening. The late houses must have air and water as before ; withholding the latter entirely when the fruit is ripening, and there giving air night and day.

Pine Apples.—Temperature from 65 to 90 degrees. Many of the fruit will now be cut, and a general re-potting of the young plants and suckers may take place ; the suckers are strengthened by remaining for a time on the old stool. On the Hamiltonian system they are allowed to remain attached, and the soil is brought up about them, whereby they are induced to root freely ; of course they are all planted out in a prepared bed of soil. Equal success attends both plans when due attention is bestowed. Where there is a brisk heat, airing at night is commendable.

Strawberries.—Those plants which are being prepared for forcing should be put early into six-inch pots and placed close together, or plunged at the foot of a south wall, where they will become fully matured early in the autumn ; and this is no small advantage for the earlier crops.

Vinery.—Temperature from 65 to 85 degrees. Where the fruit is ripening keep the house dry and airy. The growing house must be moist and free of draughts. The houses for early forcing must be thrown open, or the vines taken out. Attend, where necessary, to thinning, stopping, and keeping clean. The late houses must not be too much retarded, as cold will and does cause a stagnancy of the "circulating medium," which results in stoneless berries, rust, and unripened wood. It is well to do without syringing in the late vineries where little fire heat is required ; the necessary moisture may be maintained by damping the floor, walls, &c.

FLOWER GARDEN AND SHRUBBERY.

Sow for planting out and early spring flowering, such annuals as clarkia, collinsia, coreopsis, œnothera, nemophila, gilia, &c.; they will do well on a warm border in a light sandy soil. Biennials and perennials may also be sown.

Plant and Transplant biennials, also a few annuals for late flowering, and shrubs of all sorts if required.

General Directions.—Every place being now filled must be kept, as respects neatness and cleanliness, in a superior style, to impart the desired gratification; both choice flowers and skilful arrangement would alike be lost without these accompaniments. Towards the end of the month the shrubs will demand attention, if any are to be transplanted. Follow up the propagating of flower garden plants, selecting those things which apparently best suit the situation and object. Do not omit watering as required; this is often a trying month for flowering plants: use weak liquid manure.

Anemone seed may be sown almost as soon as gathered; select a rich and light soil, and keep it damp until the seeds vegetate. Take up the old tubers and dry them, if not already done.

Annuals sown out of doors now, will flower early in spring. Mignonette and other choice things can be put in pots, and preserved in frames through the winter. Clear away at once those past bloom, unless they are wanted for seed.

Auriculas may be shifted now, but only take those which require it, that is, those whose roots are matted; give them a soil composed of one half sandy, turfy loam, and one half decomposed cow-dung; place the plants in a frame, shut it close, and shade slightly for a day or two, where air must be given and shading continued only in the middle of the day. Prick out and look after seedlings and offsets; do not throw away the seed pan, as many more seeds may yet vegetate.

Biennials of all sorts may be pricked off in beds prepared for them.

Carnations.—Water the layers, and lay what are to be done. From those pods intended for seed remove all withered petals and any damp tendency. Seedlings may be planted where they are to bloom.

Crocus seed may be sown in pans and placed in a cool frame, or it will do in the open ground. The old roots are better not lifted too often, if they can be allowed to remain.

Dahlias should now be in bloom, and continued vigilance is requisite to keep down vermin. Flowers for show must be shaded carefully, and those likely to be perfect assisted by taking away the buds that are near them: remove all bad blooms the moment they appear: fasten in the lateral shoots and cut away any spray-like branches. Bad seedlings should be thrown out at once.

Laurels, Laurustinus, &c., may be removed with impunity at the end of the month; a balancing of the head and root, by way of pruning, may be effected previous to transplanting.

Lawns should have regular and constant attention to mowing, rolling, sweeping, &c., on which their softness and closeness depends.

Pansies. — Shade those for competition. Form new beds of the young plants, and still propagate others. Be careful to impregnate where seed is required, and nip off all besides. Increase the showy sorts for the borders.

Perennials. — Propagate such desirable plants as pentstemons, phloxes, campanulas, double rockets, lychnis, &c., either by cuttings or divisions. Cut away all the flowering stalks that are past bloom, unless they are wanted for seed.

Pinks.—Plant out in nursery rows, the rooted pipings, six inches apart, in a rich soil of sandy loam and dung.

Ranunculus.—Sow early, either in pans, or in the open ground; take up the established tubers, and dry and store them.

Rhododendrons, Kalmias, and such like shrubs, should be copiously watered, and divested of all their seed pods; liquid manure will be found beneficial, if they have not yet matured their growth.

Rockets, if strong, should be planted out where they are to flower; a few may be put in the shrubbery border.

Roses.—Remove all the wild shoots from the stocks of those that are budded, and secure the shoots of the buds against winds: if green fly yet attack the young shoots, syringe with tobacco water promptly.

Stocks.—The Bromptons and Twickenham stocks may be planted where they are to bloom next spring; but it will be well to pot a quantity next month, and keep them in frames. Sow the German sorts now, and preserve them in frames through the winter.

Tulips.—If the bed is in the flower garden, it must be filled during summer, and so with ranunculuses and other bulbs, Pelargoniums ready to flower, being plunged in them, as soon as the bulbs die down; but if apart in any other situation, the soil in the beds may be ridged, and turned at least once every month.

Wallflowers, Sweetwilliams, and similar things, should be planted out if large enough, where they are to bloom; or if small, pricked out in nursery beds: most of these look best in masses, and may be planted in that way amongst annuals and other plants, which must soon be cleared off.

WINDOW GARDENING.

The chief matter at present to be attended to, is to allow a regular and liberal supply of moisture to the plants, especially those in sunny aspects, using dilute manure water occasionally. Another point is to prepare hardy evergreens for the balconies, to replace the flowering plants as they go out of bloom. Hardy spring flowering herbaceous plants might also be introduced in a few of the larger pots or tubs; such for instance as the Christmas rose, and *Tussilago fragrans*, the first for its large white flowers, and the last for its pinkish blossoms and pleasant hawthorn-like scent. As they both flower by or before March, they are doubly welcome at a time when little else can be procured.

Bulbs, such as hyacinths, crocus, &c., should be procured as early at the end of this month as possible, and potted and buried six inches deep in ashes under a north wall. They may then be had in perfection by Christmas: pot them in free sandy loam.

Begonias.—Reduce the amount of water to such as are dying down, and let them go to rest. Expose the pots freely until all moisture is dried up, and then set them by in a dry cool place.

Camellias.—Protect all the plants from too much moisture, and remove a few to flower early, to a warmer situation.

Cinerarias.—Shift the plants as they advance, and water freely; stop such as appear likely to start into flower, in order to strengthen them before winter.

Fuchsias.—Shift such as require it, or if in pots sufficiently large, use manure water more frequently than before. Put in cuttings of any desirable kinds, and pot them off as soon as they are well rooted.

Geraniums. — Shift the early flowering sorts, using a free, and rather rich soil. Thin out the weak or misplaced shoots, and stake out the branches. Stop the young shoots of such as are to flower at the usual season, and shift such as require it. Keep the foliage very clean at all times.

Myrtles, and other evergreens, should be regularly, but not too copiously supplied with water, and should be so placed as to have the full benefit of the sun to ripen their wood.

Roses.—Keep them dry at the root by laying the pots on their sides in a shady place. The Chinese, and similar sorts, should be pruned, and encouraged to flower again, by keeping them warm and damp at the root.

Primulas.—Sow a little seed to keep up a succession; shift those previously in pots, and keep them rather close until they root again.

Violets.—Pot up a few, and place them in a shady situation to form new roots; water, to settle the mould about the roots, but do not sodden them with too much.

Wardian Cases.—Continue the treatment previously recommended, filling up blanks, and watering freely when necessary: if many succulents are introduced, this last operation must be done with great care.

PITS AND FRAMES.

The principal operations will consist in preparing a stock of plants for the next season; and also the different structures for their reception.

Annuals.—Small sowings of the half-hardy sorts, as rhodanthe, schizanthus, lobelia, and others, may be made about the middle or end of the month, and may be placed in a warm frame until up, when they should be gradually hardened off, so as to stand full exposure to the atmosphere as long as the weather continues favourable. The hardy species, as collinsia, gilia, intermediate stocks, &c., may also be sown, and pricked off as soon as big enough into pans or boxes. Give air freely after they are once up, in order not to weaken or draw the plants.

Half-hardy plants, as calceolarias, petunias, verbenas, &c., should be propagated to the desired extent, and those cuttings previously struck should be potted off. Keep them close until growing freely, and then allow plenty of ventilation: also keep them topped as they advance, in order to induce them to become shrubby; water regularly. If it be intended to keep them in the cutting pots during the winter, the cuttings should be placed thinner, and they should be topped as soon as they are rooted, and should also be hardened off as soon as possible. Sow any seeds of these plants which have been saved, using a light free soil, and scattering the seeds very thinly. Give air freely as soon as they are up, and pot off singly into small pots as soon as they have two or three leaves.

Forcing pit.—Many plants intended for forcing, may now be placed in this house, where they can be sheltered from the heavy rains, at the same time that a free supply of air can be admitted, and the watering so limited as to thoroughly mature the plants. Amaryllis and other bulbs, cacti, roses, and various others may be so treated. Lily of the valley, violets, and such plants, may also be potted up from the open ground at the end of the month, and should be protected from heavy rains.

THE GREENHOUSE.

Temperature.—From 70 to 75 degrees by day, and 60 to 65 degrees by night.

Ventilation.—Give air freely by all available methods, and leave a considerable portion of the lights open all the night in very hot weather.

Watering.—This should be copious where the plants are growing freely, and the house should be kept damp and syringed in the same proportion. Such plants as have completed their growth must be more sparingly supplied with moisture.

Potting.—Continue to shift such plants as require it, being very particular in the drainage, as many will have to stand all the winter in the pots they are put into at this season.

Soils.—Collect new supplies as opportunity occurs; old compost heaps should never be exhausted before more is collected; besides, entirely fresh soils are not beneficial to all plants.

Dressing.—See that all plants are properly cleaned, staked, and tied up, before they are staged; also that the surface is stirred and the pots washed.

Insects, &c.—Examine the balls of earth closely, and remove all worms or other vermin from the roots, previous to the plants being finally arranged in the house. Fumigate as often as green fly makes its appearance, or, if only a few plants are attacked, syringe with tobacco water.

Aloes, and succulents generally, should be housed early, before heavy rains come on; give only sufficient water to keep them from shrivelling up too much.

Agaves, and large succulents, should also be placed under shelter from rain and rough winds.

Alströmerias must be kept in a place sufficiently cool and dry to preserve the tubers in a plump state; they may be examined occasionally to see that they do not get so dry as to shrivel.

Annuals.—Sow some of the choice sorts to bloom in early spring. When potted off and established keep them near the light, and admit air freely, watering as requisite.

Azaleas.—Remove these to a cool house, in case of heavy rains; they must never get dry, or, if the plant be not killed, it is sure to lose all its leaves.

Calceolarias.—Cut down the old plants as they go out of flower; repot them, and start them again in a pit, kept rather close, until they have formed fresh roots; shift old and young as they advance, and water freely: old plants are hardly worth growing if cuttings are plentiful.

Camellias.—Begin to return such plants as flower early, to the house, and syringe them often, but keep them rather cool at present. Bud stocks with desirable sorts, and place the plants in a close warm pit, where they must be kept moist.

Cape bulbs, as ixias, gladiolus, &c., if they have rested two or three months, may now be potted in turfy loam, with a considerable addition of sand; place them in a cold pit, and give no water until they begin to grow.

Cephalotus follicularis (New Holland pitcher-plant).—Keep a moist atmosphere about it, and keep it close and warm in case of cold rainy weather.

Cinerarias.—Shift as the plants advance, and let them be supplied freely with air and water. Pot up more suckers or plants from the open ground, and keep them stopped for a time, so as to allow the earlier plants to gain a sufficient start of the next crop.

Chrysanthemums.—Shift as requisite, and stop the shoots where necessary, but not later than about the middle of the month. Peg down more layers into small pots, and keep all sorts well watered, using manure water occasionally to the established plants.

Crassulas, and allied plants, as sempervivum, should be very sparingly watered, especially such as are intended to flower soon.

Cyclamens.—If any show signs of growth, they should be potted; if not, keep them cool and rather dry.

Epacris.—Protect from heavy rains such plants as have ripened their wood, but allow a free circulation of air about them at all times.

Ericas.—Let these remain exposed, using the shade to protect them from either sun or rain in excess. The strong growing sorts should be gradually exposed to the sun as they ripen their wood; the smaller plants, and smaller growing species, are best grown in pits all the season, where a similar line of treatment can be applied to them, modified by their more tender habits.

Fuchsias.—Put in cuttings of any new or scarce varieties, and pot off the young plants as soon as they are sufficiently rooted, so as to get them well established before the cold weather comes on. Shift any of the very late plants that require it, and use manure water occasionally in watering them.

Gompholobiums, and slender creepers, should be protected from heavy rains, and moved early to an airy part of the house, if such weather continues.

Haworthias, Apicras, &c., should receive little or no water, unless in a growing state; by attention to this they may be had in all stages all the year through, in a warm house.

Helichrysums.—Encourage such as are growing, applying water very carefully, and being sure that the drainage of the pots is always good.

Leschenaultias.—Encourage the growth of those intended for specimens, but check such as are wanted to start again for autumn and winter flowering.

Lilium japonicum (Japan lily).—These will now be flowering; supply them still liberally with water, and shade them to prolong the bloom; decrease the supply of water as the flowers decay.

Mignonette.—Sow a succession, and observe the previous directions with regard to management.

New Holland plants, as acacias, boveas, bossiæas, &c., should be guarded from heavy rains, but ought to remain entirely out of doors in other respects, in order to ripen the new growth.

Orange trees.—Propagate these and their allies by budding and keeping the budded stocks in a warm, close propagating pit. The plants out of doors should be watered more sparingly as they show signs of completing their growth, in order to rest them previous to their being housed for the winter.

Oxalis.—Dry off such as are nearly at rest, and keep the others dry. If any exhibit signs of growth, pot them and treat them as other Cape bulbs, but this is better deferred.

Pelargoniums.—Cut down such as are out of flower, and expose them; pot those which have been exposed long enough, and put them in a cool frame at first; thin the buds as soon as they are well visible, and stop the shoots of the best lot as soon as they are three or four joints long. Those intended for autumn or winter flowering should not be stopped after the middle of the month, and may be kept rather closer, but not so much so as to cause the plants to draw up weak.

Primulas.—Shift such as require it, and keep them cool: a rich light soil is most favourable to their growth. Sow a little seed to keep up a proper supply of plants: start the old plants if the supply is short; they may be made to flower rather earlier than seedlings.

Proteas, Banksias, Dryandras, &c., must be removed to a very airy house as soon as rainy weather is apprehended, and very carefully watered during its continuance.

Rhododendrons.—These will now be maturing their wood and flower buds. This should be assisted by a regular but not excessive supply of moisture, especially in dry weather. In case of continued wet they should be screened from it, but by no means moved to a warmer situation, as that would inevitably set them growing again, and the flower buds would be lost.

Roses.—Keep these rather dry at the root, especially those intended to be introduced first: a good plan is to invert them on tressels so high as to keep the top clear of the earth, as soon as they show signs of brown leaves and checked growth. This practice should be regularly followed every month until the weather becomes so wet and cold as to make it advisable to invert the whole of those wanted for this house.

Salvias.—Water these freely, using manure water occasionally; and keep them in a warm part of the house.

Stapelias.—Decrease the supply of water early, so as to forward the formation of their flower buds, as if these are developed early, the flowers expand much better than if they they appear late in October.

Tropæolums.—Keep dry, and in a cool place, where they may remain quite at rest.

THE CONSERVATORY.

Temperature, from 65 to 70 degrees by day, to 60 degrees at night. Shade during bright weather.

Ventilation.—Give air in every way, so as to keep the heat as low as possible, but do not leave any on at night likely to cause draughts.

Watering.—Use moisture freely to the coarser plants while in flower, observing greater caution with the more tender plants introduced from the other houses. The permanent plants, as climbers, &c., must be regularly watered and syringed, and such as require it should sometimes have manure water.

Arrangement.—Continue to vary the disposition of the plants as often as possible, and also take notes of the best plants, and the numbers in which required to make the best display at different periods. Such notes would afford valuable information at any time, and would save much trouble in preparing for another season.

General Directions.—Begin to lessen the supply of moisture, and shade, and increase, if possible, the circulation of air, in order to keep the house cool, the flowers in perfection, and to ripen the wood of such plants as are permanent in the house, and whose growth is finished. Of course the necessary routine to ensure neatness and freedom from vermin, must never be remitted.

THE PLANT STOVE.

Temperature, from 70 to 85 degrees by day, to 65 to 70 degrees by night.

Ventilation must be guided by the above, but must never be too great, as the plants do not safely bear too violent alterations of the atmosphere.

Watering must be performed according to the individual requirements of the plants. As a general rule the supply ought to be gradually diminished, in order to meet the loss of heat which a very short time will now bring about: syringe regularly.

Potting.—Continue where requisite, especially with cuttings or seedlings: these may be grown into nice plants before the season closes.

Insects.—Use all means to keep these down, especially the thrip and red spider: sulphur and syringing are good remedies against both. and should be incessantly applied.

Achimenes.—Shift those intended for late flowering, and still propagate for the same purpose, or to increase rare sorts; a damp situation is suitable to their growth, a more sunny one to their flowering.

Allamanda, Beaumontia, Echites, and all strong growing climbers, should be encouraged to set with bloom by stopping such free growing lateral and other shoots as do not appear likely to afford any buds by other means: reduce the moisture where the plants indicate a cessation of activity.

Alpinias, Hedychiums, and other reedy plants, should be gradually put on a shorter allowance of water as they pass the flowering period.

Aphelandras, Justicias, Ruellias, &c., for winter flowering, should be encouraged by frequent shifting and a hot damp atmosphere to form a handsome growth; do not stop these, unless the object is to make a specimen rather than to get flowers.

Amaryllids.—Keep these all in a state of complete rest, just giving enough moisture to such as do not lose their leaves to keep them from perishing. Some shake the leafless ones quite out of the pots, and store them on a dry shelf until they show their flowers.

Begonias.—Continue to remove them to a cooler place as they flower, and supply freely with water; they are easily propagated by slips or cuttings inserted in pots of sandy soil in heat.

Burchellia.—Should be kept cool, and with a moderate supply of water.

Cacti.—Remove all under cover if rain sets in, and keep them without water until they are quite red in the skin. Such as are wanted for early forcing should be still more stringently treated.

Clerodendrons.—Remove to the conservatory as they flower, and stop and grow away the younger plants for winter use.

Climbers.—Keep them stopped and regulated, and reduce the moisture to such as have made their growth.

Daturas.—By having various plants under different methods of treatment, these plants may be had in flower nearly all through the season. Dry off some, but be sure those in a growing state are well supplied with water, and, where size is the object, with liquid manure.

Erythrinas.—Continue to advance such as are in an active state, and cut down and start again such as are past flowering; the young shoots are very subject to the attacks of insects.

Euphorbias.—Keep the succulent ones hot and dry, and keep the young plants of the more leafy sorts, as *E. jacquiniflora,* continually stopped in to get a bushy plant.

Ferns.—Allow such as show symptoms of requiring rest to gradually sink into inactivity by partially withholding heat and moisture.

Gardenias.—Grow these away in the dung beds or pits, supplying them copiously with water, and guarding against insects, although few attack them in such a situation.

Gesneras, Gloxinias, &c.—Gradually withhold water from such as are getting past their prime, and prepare them for their rest.

Hippeastrums, Crinums, Pancratiums, &c., should be gradually rested as they complete their growth. Few of them, however, but require some water, but it should now be given in small quantities, or they continue in an active state, and produce no flowers.

Ipomœas.—Encourage the growth of the late flowering sorts, and stop the laterals to make them throw more flower buds; syringe constantly, to guard against red spider.

Ixoras.—Reduce the exciting causes to such as have completed their growth; shift growing plants.

Jasminums, Brunfelsias, Rondeletias, &c., should be rested as they arrive at maturity; propagate where necessary.

Lantanas.—Put in cuttings of the half ripe wood, in heat, and pot off and stop as soon as rooted: keep them stopped as they advance, and they will form good plants in the spring, either for the houses or bedding out.

Luculia gratissima.—Continue the treatment given last month, varying it to meet the season.

Malvaceous Plants, as hibiscus, will be in flower; water freely, and syringe often, occasionally with tobacco water for the green fly.

Manettias, and other tender climbers, will some of them be in bloom; water freely, and keep them neatly arranged.

Melastomas.—Such as have not flowered should be grown freely, and kept near the glass.

Melo-cacti may begin to rest if they have made a good growth, but it is easy to have them in an active state by keeping them moist, near the glass, and in a moist heat.

Musas.—Water freely, occasionally with liquid manure, and syringe often, but be particular at all times not to wet the flowers.

Nepenthes (Pitcher-plant).—Continue a moist atmosphere and high temperature, guarding against stagnant water near the roots.

Neriums like to be cool at the root, with the head freely exposed to the light. They may be easily induced to flower for a length of time, by giving them a rich soil, and much water and heat.

Nymphæas (Water lilies).—Keep the water clean and sweet about them; the water rather above than under the temperature of the house.

Palms.—Syringe well, and water copiously at the root; sometimes with liquid manure.

Thunbergias.—Prune freely to produce laterals, and syringe often; they are all very liable to the attacks of red spider. Propagate those which do not seed freely, by cuttings in sand in bottom heat.

Vincas will be flowering freely; a succession should be kept up by cutting back some of the old plants, and allowing them to break again.

THE ORCHID HOUSE.

Temperature.—The warm house for the Indian species, 85 to 90 degrees by day, to 75 degrees by night; the cool, or Mexican house, 75 to 80 degrees by day, to 65 degrees by night.

Ventilation.—Air should be admitted pretty freely among such plants as are resting in the Mexican house. Greater caution must be observed in the Indian house, as many of the plants are still growing.

Watering.—Be careful in watering plants at rest, those in a growing state may be liberally supplied, and the syringe should be always in use. The water should always be a few degrees hotter than the house to allow for the loss of heat in the course of its fine dispersion by the syringe.

Insects.—Be continually on the alert. A new enemy may now be expected in force—the earwig.

Potting.—Continue, wherever necessary, changing such as do not appear to thrive on blocks to baskets or pots, and so on with the rest, as may appear most proper. There is much to be learnt in this way.

Shading must be continued over the growing plants, but may be partially dispensed with over such as are at rest, using it only during the hottest portions of the day.

Soils.—Continue to collect all likely materials; especially singular or appropriate knobs and slabs of wood, for these seem better adapted for many plants, and not so offensive to the eye as the baskets in common use.

Imported Plants should be gradually brought forward as before directed. The masses of pseudo bulbs should not be disturbed too much at first, unless very much decayed; any dust or mould from them should be strewed over the plant again as more likely to suit it than fresh soil.

Aërides, Saccolabiums, and *Vandas,* should be rested as they complete their growth, but should be kept in the warm house.

Cymbidiums should be kept cool and rather dry after their growth, until wanted to flower, when they generally start without difficulty.

Cattleyas.—Grow away, taking great care the young roots are not destroyed by the various insects which feed on them.

Dendrobiums.—Remove such as *D. nobile* and its allies to the cool house, and keep them rather dry for some time. Those producing spikes of flowers, should be continued in the warm house, with only a small allowance of warm water while at rest.

Oncidiums.—Continue to remove these to the cool house as they form their growths, and restrict the supply of water.

Stanhopeas.—Such as have only lately flowered should be encouraged to strong growth while the heat and light is powerful; afterwards they should rest until they show their flowers.

PRODUCTIVE FAMILY GARDENING.

The great secret of getting rich is to make the most of what we have, and whether this applies to money, to time, or to land, it is the same. You may almost tell what a man is by the appearance of his garden. Does he make the most of his ground? then there is some hope he is prudent. Does he make the most of his labour? he will rarely want. We do not mean that such men are never unfortunate, that they have not their troubles and trials like other men; but under every kind of visitation such men are better prepared, and therefore suffer less than careless reckless persons. In a garden no rod of ground should be ever idle. If a man who is naturally lazy has not kept his ground well cropped, he may have his excuses about laying fallow, ridging it in winter to mellow the soil, or leaving it rough that the frost may get into it; but there is no occasion for all this,—the soil need on no occasion to be at rest; change of work is a holiday to man, and change of crop is all that any ground needs; for no two crops require the same kind of feeding, and consequently, by changing from one which requires high feeding of one kind to another that requires no feeding, or feeding of another sort, the ground continues at work without being exhausted. If ground has been used for carrots, parsnips, or beet-root, it may be immediately cropped with lettuces, or some crop which has no tap roots. Turnips, also, and

potatoes, may be followed by peas. Very little attention (if that be properly devoted) will be necessary to prevent ground being wasted, or crops being out of place. When a garden is wanted for a family, and economy rather than variety is to be consulted, we are quite sure that asparagus, sea-kale, and similar expensive things, ought not to be undertaken. The first object is plenty, the second object is the choice of those subjects which last on the ground, or preserve well when taken off. Potatoes are a first consideration, onions, carrots, parsnips, and beet-root, are next, and Jerusalem artichokes are not to be forgotten, because all these are capable of being stored for months after they are taken up; then, of those which last a long time on the ground, and afford a constant supply, scarlet beans, cabbages, onions, winter spinach, and savoys, are the most worthy of a cottager's attention; and brocoli (except the sprouting, which is a hardy useful vegetable), cauliflowers, peas, and other subjects, which yield less produce on the same ground, by reason of the greater quantity of room they take, or the longer period of remaining on the ground, must be considered as luxuries. Every body with a garden must consider the circumstances under which he has to cultivate it. If he has more ground than his family require for their supply, care must be taken to have the surplus of a useful and marketable nature, such as are always saleable, and if not bought on the ground, capable of being preserved for some time. All the articles mentioned in the first instance are of this nature. Potatoes, carrots, parsnips, beet-root, onions, and such like subjects, when ripened, will keep, and are always in request, whereas to over-grow any perishable crop is unwise, because they will bring nothing, as when one person is overdone, most people are in the same predicament. There are some seasons in which it is better to sow for main crops, but in a general way it is better to have different sowings, and not too large, because all will frequently come in together, and so in a few days all be gone by. How frequently do we see a whole planting of cauliflowers come in and go by in a single week; they are unlike cabbages in this respect, for a cabbage is eatable from the time it has four good leaves until it is hard and solid; hence cabbage is the most useful of the green crops, and should be sown at all seasons, that there may be always some ready to plant out. Savoys are perhaps the most hardy of the good winter greens. Scotch kale may be an exception, for hardly any degree of frost will kill it. Brussels sprouts are an excellnt green; but when the object is economy of ground, it is better to limit the crops to those which are most servicable as food, or most saleable as a surplus. As a general rule, where ground is an object, double culture is desirable, that is, the planting of one crop between the rows of another crop; sowing rows of spinach or peas, or planting rows of French beans, or lettuces or leeks, beet-root or parsnips, between rows of other subjects. The only good object to be attained by this is the saving, perhaps, of a month or something more occasionally by digging between the rows of a crop that may be not cleared off for a month or six weeks, and planting young stuff that will not be in its way till that time arrives, although it will be getting on pretty nearly as fast as if there was nothing there. When the other crop comes off, the digging of the ground on which they stood will let air into the soil, and greatly refresh the rising crop, whatever it may be. Another mode of economising the ground is to plant out some subjects at half distances. Cabbages, in the fall of the year, are adapted for this. If, for instance, they would cabbage well at two feet apart from row to row, and eighteen inches from plant to plant, put them in rows only one foot apart, and only nine inches from each other in the row: all through the winter, you may be pulling the alternate rows for greens and cabbage plants, and when you have removed the alternate rows you may begin to pull up the alternate plants; meanwhile the plants intended to cabbage have lost nothing, because before they are too thick those that are removed give ample room to the remainder to cabbage. Another mode of economising, is to sow radishes, spring onions, lettuces, &c., in the same quarters as the early potatoes, and they are cleared off for consumption or for planting out before the potatoes are inconvenienced, or grow enough to injure the other crops. Experience will always teach us the best mode of economising ground and labour; but some few general hints may be useful to the amateur and the cottager. There are many books in which there are directions for the garden operations every month in the year, but even the best of them are not explicit enough in respect to the quantities or proportions of ground to be sown or planted; but so much depends on the circumstances under which a garden is cultivated, the wants of the cultivator, and his command of labour, that we hardly know how it could be defined, unless we take an ordinary garden required for an ordinary supply. There are not, however, two families alike in this particular: one family may not consume a peck of onions in a year, while another, no larger, may eat several bushels; under these circumstances (like the little work called *Gardening for the Million*), we recommend frequent sowing rather than large crops, and lay it down as a rule that the wants must regulate the supply. Productive gardening, therefore, may mean large produce, abundance of everything; but the intended application of the term is large produce *without waste*, and the way to secure this is to limit the quantity of perishable articles, and make all the abundance and surplus of some crop which is always saleable and not perishable,—that is, not perishable within the period of several weeks. We propose to direct briefly the cultivation of the various subjects desirable to a family, so as to make the most of the ground.

POTATOES.

The numerous writers on the cultivation of the potato differ as much in their plans as if they were advising upon as many different subjects. We have grown them upon every plan. The indifference of the root to many different modes of treatment, and its success occasionally under all, has made all men too careless. We set out with preferring whole tubers for sets, in preference to cut sets, when they can be got of the right size, and, when we can get whole sets, we like autumn planting better than spring. Whole sets should, on account of economy, be small, that is, about the size of a walnut in its green husk; those much smaller might prove weak, if much larger there would be waste. Whole tubers are less liable than cut ones to be damaged by wet or frost, but for winter planting, or rather for autumn planting, they should be a clear six inches under the surface, for which purpose the dibble must be thrust down eight inches. In selecting the place for potatoes, plant those intended to be early under a south wall or paling, or on a sloping southern aspect, using the Ash-leaf kidney, Soden's early Oxford, Rilot's flour-ball, Alliway's early seedling, and Looker's Oxonian, or any other of the well-known early kinds. Plant any of these a foot apart, in rows eighteen inches from each other. Plant in October. Between these rows there may be planted rows of cabbage plants, not more than six inches apart, to be pulled as greens as soon as they are large enough to eat, beginning by taking every other one the first time you go over them, and clearing them altogether the second time. When the potato plants are well up, let them be earthed, that is, the earth drawn up round their stems with a hoe; but although we mention October, the open weather from that time till May would be good, if the vegetation could be kept back; for the instant a potato begins to shoot the eyes, it begins to take harm. Common sense dictates that the instant the eyes begin to swell the tuber ought to be in the ground; for this reason, seed potatoes ought never to be pitted, but when taken up they should be dried on the surface of the ground, or what is called greened. This process thickens the skin, evaporates a portion of the moisture, and adapts them for keeping, though it totally spoils them for eating. They ought then to be kept in a dry, cool place until the period for planting arrives. Suppose them disinclined to grow, and the eyes not to start even till late in the spring, they would be just as well planted the last day as the first; but we repeat that the instant they begin to grow (before planting), they begin to lose quality. Presuming large potatoes alone can be had for seed, the necessity of cutting them into smaller sets must be admitted; but equal care, indeed greater rather than less care, must be taken to cut and plant before they begin to grow. In a general way it may be observed that a potato has the eyes for growing chiefly on one half. Now if the potatoes to be cut are in good order, and not growing, one-half may be cut off for eating, the other containing the eyes should be so cut as to have one strong eye on each shoot; some are more liberal, and have two, and in some kinds of potatoes the eyes sit so close that you are obliged to have more. These cuts should be spread out to dry before they are planted; a little lime sifted over them, so as to dust them all, is desirable. The planting may be entirely regulated by the disposition to grow. It may be sufficient to say here that when a potato is in the ground it is gaining strength as it grows, but while it is out of the ground it is losing. It may also be observed that potato planting is good so long as potato sets that have not begun to grow can be procured. The various modes of planting depends on the quantity of ground, the rate of labour, and the quality of the soil. The following practices are common in different localities:

1. Trenches one spit deep are dug, and the soil thrown on one side; the trenches are half filled with stable dung, the sets placed on the dung, and the soil placed on the top, forming a complete ridge, under which the potatoes soon vegetate and often yield heavy crops; but in general the best potatoes for eating are those grown on undunged land, which does not yield so much.

2. Dung is placed on the land and dug in, and the sets are dibbled in from four to six inches below the surface; in this case the soil should always be pressed on the tuber, that it may lie solid on the ground, for if this be carelessly attempted, one half the sets, being dropped into a hole that a lump of soil may stop up half way, would be left without any soil surrounding them: this cannot but be injurious, therefore we cannot be too particular in seeing that the soil above is bruised and lightly pressed, so as to surround the set.

3. Where there is much land, furrows are ploughed, the potatoes dropped into them, and ploughing the next furrow covers them up. In this case, the second furrow is not used, as it would be too near for the rows, but the third furrow fills the second, and is used for the sets, the fourth covers them in, and so on, the whole ground being thus well stirred. If such land is to be dunged, the dressing is spread over the surface and ploughed in.

4. After digging and, if necessary, dressing the ground, the sets are laid in rows of the proper distance, and earth is taken from between the rows and thrown on the sets.

A crop of very early potatoes may be had, by digging the ground along the foot of a south wall, placing the sets a foot apart, and about six inches from it, and then take earth from the front and throw on them so as to form a sloping bank, and when the plants come up, earth them up on the outside. This may be a small crop, because it is generally dry, but it comes early in proportion, and always of fine flavour. The late potatoes ought not to be planted late, that is, the sets must not have grown out before planting, and the distance for the late ones ought to be two feet, and the very large ones two feet six from row to row. Potatoes are ripe when the haulm decays. Regent's, Forty-fold, York red, Ne plus ultra kidney, Champion, Red kidney, are good sorts for main crops.

CARROTS, PARSNIPS, AND BEET-ROOT.

Next to potatoes, which are food for months, these three vegetables are the most useful. They are not only good with almost every kind of meat, but they are always saleable in any quantity; all grounds are not suitable, for they require fifteen inches of good rich light soil, free from gravel and stones. The soil should be trenched and well broken; beds of four feet wide, with one foot alleys between them, are the most handy for all three, and the seed should be very thinly sown over them; when the plants are up, they should be hoed to leave them eight or nine inches apart, nor should a single weed be allowed to grow. The first hoeing may not do this effectually, but the second, with the help of the hand occasionally, will accomplish it. These crops are valuable in all families, and, besides using them as soon as they are large enough, they may be stored as soon as they are ripe, and, with care, keep through the winter. The early carrots to be drawn and eaten as soon as they are of sufficient size, should be sown in February and March, the main crop the latter end of April; the best for the former is the Early horn and its varieties; the best for the late is the Altringham. For storing they ought not to be taken up until the foliage turns yellow.

ONIONS.

This is one of the most useful of vegetables, and deserves especial attention; like the previously mentioned crops, they keep a long while if well ripened, and the principal art in their culture is to well dress the ground: well decomposed night soil a good two inch thickness all over the soil, forked into and well mixed with the top six inches of mould, will be found an excellent dressing; but it must be well decomposed, or it will be too strong. The surface should be well levelled, the lumps well bruised, and the seeds sown thinly and equally over the bed; this should be rolled in or trodden in solid, and raked smooth and even. The beds, like those of all crops sown broad-cast, ought to be four feet wide, with alleys of one foot. The month for sowing for a main crop is March, quite the beginning; when they are up they should be hoed out, so as to leave them six inches apart, and in a week or two a second hoeing will be found necessary; as the onions grow there may be found some close to each other—two in a place instead of one. These should be drawn by hand, so as to leave only one, and they must be kept clear of weeds all through their growth. When the period for taking up approaches, and the bulbs have swelled nearly as much as they will, the market gardeners make a practice of breaking down the foliage, under an impression that to keep on growing would exhaust the onion, and that stopping the growth of the leaves by breaking the necks throws all the strength into the bulb: we venture to affirm that this is a mistake, the breaking down of the leaves can be of no service; they, like all other plants, receive one kind of nourishment from their foliage, another from the root, and unless all goes on harmoniously, things cannot be at their best. However, when the foliage begins to turn yellow the bulbs are ripe, and may be lifted and left on the surface of the ground to dry out some of their moisture; they should be preserved in a cool dry airy place. The sowing of earlier crops and later ones for present use may always be done where something else is growing, such as between lettuces that are planted out, or any warm border or corner, or in frames; they do not come under our definition of productive garden, but rather among the luxuries than otherwise. The sorts best adapted are the Deptford, white Spanish, Tripoli, and Portugal; all these keep well and grow to a useful size.

JERUSALEM ARTICHOKES.

The value of this root was, perhaps, hardly known by a large portion of the public until the scarcity of the potato rendered all vegetables available; as a substitute it is very poor, but as a vegetable capable of being dressed many ways, and requiring very different treatment in cooking from the potato, it is worth a place, because it is preserved as easily as any vegetable in store all the winter, and can be made available. It is chiefly used in stews, alone or with other vegetables. The culture is very easy; the haulm grows six feet high, therefore requires room and support. The best place is along the back of a border, or next to north or east palings and hedges. One row is found prolific, but as the uncouthness of this crop is against it, most people who cultivate it only have a large patch in the worst part of the garden, so that neither sun nor air can get to the roots. They are mostly left for years, the tubers becoming numerous and small. If there is to be a second row, there ought not to be less than a yard between the rows; plant them like potatoes, and dig up the crop annually, and keep it clean; take out every tuber, and, at the proper time, plant them again.

TURNIPS.

This is one of those useful vegetables that can be enjoyed with almost everything. In field culture it is precarious, but in garden quantities it is very manageable. They may be sown every month from February to September, and for families using quantities it is better to sow every month. They should be sown broad-cast in four feet wide beds, and as they get four rough leaves they should be hoed out six inches apart, and be cleared of weeds. They may require several hoeings, and a succession of crops for those who consume many will be desirable, but regard should be had to the probable supply of other vegetables when these are likely to come in for eating, and this, with the quantity likely to be wanted, must always guide these comparatively perishable crops; for turnips are not so well stored as carrots, parsnips, or beet-root; but no vegetable can be more wholesome than the turnip, and so that they be not oversown they are really good. The new early stone, the Dutch, and the Maltese yellow, are the best for culinary purposes. The best month for sowing a principal crop is June, but if showery weather come in July, that is a good month.

CABBAGES.

Of all the green crops this is the most valuable; it may be sown and planted out, if the weather be open, every month in the year; it stands almost any frost. It is eatable from the time it is large enough to handle until it has acquired a hard close heart. It is a crop to put on every bit of otherwise idle ground; it can be planted between rows of anything and everything, either to be eaten as greens when large enough, or left to cabbage on the coming off of other crops. They should be sown thickish on a seed-bed in January, and every week there should be a lot put out, three inches apart, to strengthen for planting out. The sowings should be repeated every month till August, for a constant succession of plants is everything. There need not, however, be large quantites sown each time; the quantity must be regulated by the wants. Nor is the use of this excellent vegetable over when the full grown cabbage is cut, for the sprouts which follow are equally good. Planted out to cabbage, they should be eighteen inches apart in the rows, and the rows two feet asunder. When the best part of the cabbage is cut, other crops may be planted between the rows, the ground being first dug, and the stumps may be all taken up and be planted close together in some otherwise useless spot and yield a mass of greens when scarcely anything else is to be had. The seed is but little object; sowing, therefore, to provide at all times plants to put out is a necessary precaution. The best sorts are new Early nonsuch, Wheeler's imperial, Sprotsborough, Nonpareil, and Early York—the Battersea is not to be despised, though it grows a large size and wants plenty of room.

SCOTCH KALE, BRUSSELS SPROUTS, SAVOYS.

These are only so many different members of the same family, and may or may not be used. The savoy is the most useful, the Scotch kale the most hardy, but it is an inferior green to either a good savoy or cabbage. The savoy should be sown in April for a general crop, and the Brussels sprout and kale at the same time. These may, when large enough, be planted, or rather pricked out, three inches apart, to strengthen previous to planting out in their final place. In doing this the strongest plants must be taken, and every few days, as others get large enough, they may be pricked out, so that the store-beds may have a succession of plants constantly coming in, large enough to plant out as they are wanted. They may be always planted out as other crops are cleared, when the ground is not required for a different purpose.

RED CABBAGE.

Few people know the worth of this, except for its use as a pickle, but a moment's consideration will convince any thinking person that the immense number brought to market can never be consumed for that alone. It is used raw as a salad, and is excellent. When grown well, too, and cut at the right time, the red cabbage will store the best part of the winter, merely losing two or three of the outer leaves. As a salad it is economical and capable of being eaten by itself, and only requires to be cut into the thinnest possible shreds. The seed of the red cabbage may be sown in August, so as to get strong enough to stand the winter in the store-beds, where they are to be pricked out six inches apart. They may be planted out in February or March to their final destination, two feet apart one way and eighteen inches the other; spinach may be sown in drills between the rows, and will come off before the cabbages get large enough to occupy the room themselves. Seed may also be sown in small quantities in January in a frame or among the radishes, to be protected with litter from frost, and they will succeed from sowings any time during the period from January to August. When they have established themselves after final planting out and begun to grow, the earth should be drawn up to their stems, and they may remain in the ground until they are hard and solid, for in that state they will keep for months.

SCARLET BEAN.

This is the poor man's luxury, for besides growing up against palings, or in almost any corner of the garden, or as a blind, and the plant from its peculiarity forming a good fence or hedge to separate any two departments of the garden, it is very prolific, and can hardly be said to leave off growing and bearing until the frost cuts it off. Again, the beans are allowed to grow to a size that renders the yield considerable, and the larger they are, the better they eat, until they get old and stringy. The seed should be sown in April, and the following are the different modes of planting them:—three in a patch, at a distance of three feet from patch to patch, or singly in rows a foot apart. In the first, poles or strong branches are driven into the ground at each patch; in the other they may be trained up bean sticks, placed along the row, or poles may be placed eight or ten feet apart and a line fastened along the tops, from which single lines may be led to each individual bean, or if against a north wall or paling, nails may be driven along the top, from which strings may be fastened in lengths to each plant. When they begin to bear, they should be frequently looked over, and all that are large enough, be picked for use, because they grow rapidly, and so long as they will break short in two pieces without being stringy, they are eatable. If a succession is desirable, sow again in May, June, and July. Another, and if the ground be limited, a more advantageous way of growing them, is to sow the seed in a patch, in two or three barrows of dung for the sake of slight bottom heat, putting about six inches of mould for them to grow in, and when, about the middle of May, the weather looks settled, plant them out carefully without losing any of the fibres, and place the sticks, or poles, or string to them as soon as they are out.

HARICOT BEAN.

As a winter store, a few rows of the large white kidney or haricot bean may be sown at the end of April, and allowed to go to seed altogether, the entire crop to be used for stewing in winter. They require rich ground, that is to say, soil which has some heart in it, but after earthing up they require little or no care till they are fit to gather in.

BROAD BEAN.

A few rows of these may be grown with advantage; let the beans be planted about six or eight inches apart in an open situation. When they are well up, the earth must be drawn to their stems, and as soon as they are in bloom, their tops must be taken off. They require to be gathered at two or three different gatherings, because the lower ones will fill out before the others, and when large enough to pick, their removal will strengthen the others. The seasons for sowing are from November to March, but as the economy of the ground on the one hand, and the chances of injury by frost on the other, render spring planting best for the cottager, it is better to insert them in the ground about March; there is less risk of disappointment. There are many sorts or varieties of these beans; Marshall's prolific is a sweet eating and heavy bearing variety, but not large; other good ones are Wonderful Longpod, improved thick Windsor, green Windsor, and Toker.

CELERY.

Although not always the most economical way of disposing of ground, if celery be grown in the ordinary way, a piece should always be spared for a supply for soups; celery for this purpose may be sown in a warm border in February, and as soon as it is large enough to prick out, it should be put two or three inches apart, only in a bit of good rich soil, to grow into strength. When it has advanced so as to stand the removal well, it may be planted in the common surface in rows three feet apart, so that any crop that comes off pretty early may be planted between. As the celery advances in growth, draw the earth up the stems, and continue this as long as it is in the ground. It will be found quite as useful in soup as if it had been grown in the trenches, and with not a tenth part of the trouble, and in time it will be large enough to eat as salad; the only thing it requires is constantly earthing up as it advances; there will be a sufficient quantity blanched to make it eatable, but a few plants for soups are as necessary as onions, and as wholesome.

LEEK.

Perhaps, looking at the utility of this esculent, boiled, stewed, or in soup, there are few more useful vegetables, and it has the advantage of taking but little room; it may be planted anywhere; it can be used in an alternate row with almost any thing, and not require more than a six inch extra allowance between the rows; or if they are planted in rows two feet apart, any crop you please may be planted between them, especially any kind of winter green. Sow the seed in a patch in February, when it comes up keep it very clear of weeds; as soon as large enough, prick out six inches apart in a piece of well dressed ground, and when it has acquired good strength, plant nine inches apart in the row and the rows two feet asunder for a crop between, or one foot asunder if no other crop is to be introduced, but lettuces may be planted in the alternate rows, and the alternation of crops looks well if nicely managed. It is as well to earth up leeks as you would celery, that is, sufficient to blanch about three inches or so of the plant. Boiled in salt and water till they are tender, and eaten with melted butter like asparagus or sea-kale, the water being changed when half done, the leek is excellent, and when used in soup they should be boiled, cut into two inch lengths, and used in plenty by stewing them afterwards with the soup itself. The leek is not sufficiently cultivated among cottagers; and some object to them on account of their very strong flavour, while boiling them and throwing the first water away just before they are quite done, renders them as mild as a Spanish onion; whereas there are many advantages in their culture that should induce them to be adopted to a great extent, if not preferred for the purposes to which onions are generally devoted.

ASPARAGUS.

Here we are getting to something rather extravagant, but there is nothing but economy to prevent its culture, and our business is to show how easily it can be done if wanted. Trench a row of soil eighteen inches wide across or along any quarter of the garden that is open, put a good four inches thickness of dung between the lower and upper spits of earth and tread it in, then throw in the top spit, which should be of itself in good heart. In the centre of this trenched ground draw a line tight, and within a circle of six inches place half a dozen seeds every eighteen inches along the row; four feet from this, do another, and so occupy as much ground as you like with rows at these distances. The object of placing them at such a distance is to have crops between. This sowing to take place in February, March or April. When the seed vegetates, the place may be kept clear of weeds, and when it can be seen which of the plants take the lead, leave the strongest, two in a place, and keep them very clear from weeds. In the mean time the ground between these rows may be cropped with anything that may be required, so that there be room left for the young plants of asparagus to grow. When the haulm turns yellow it may be cut down, and in cropping the intermediate ground, care must be taken to avoid injuring the roots, which will be found near the surface; a little soil may be hoed towards the stems, so as to have the effect of covering up the roots a little, as a sort of protection, and forming a slight ridge, that it may be seen where the rows are. The principal object is to keep clear of weeds. Cut down the haulm at the end of the growth, and slightly earth up, to keep the row conspicuous when there are no plants to show it, and avoid damaging it in minding the other crops. After the third year you may calculate on cutting, and the only way to do this with advantage, for your own eating, is to let the buds grow a good four inches above the surface, and then cut it even with the ground. All the trouble of forming beds, and earthing up eight or nine inches, is saved by doing without the long useless stem which market bundles have, and instead of being a troublesome thing, involving considerable labour, to form the beds every autumn, there is no more trouble than there would be with a cabbage crop. For family purposes the asparagus is better, the roots are less exhausted, the ground less interrupted or interfered with, and, in fact, the luxury is no more trouble than a crop of broad beans, or a row of scarlet runners. In cutting this vegetable, care must be taken to avoid injuring the root. On cutting down the stems after the first year's cutting for use, a good dressing of dung should be laid at top, and a little soil thrown on it: the immediate effect of this is beneficial, and it scarcely more than reinstates the soil, for it washes away from the roots, and in time would expose them altogether; but there is to be no professed earthing up to lengthen the buds as if they were for market, for that does away with the simplicity and economy of this mode of treating it, which is reducing its culture to the same trouble as almost any other vegetable, and the quantity eatable is nearly treble that which can be found in the marketed asparagus.

CAULIFLOWER.

This highly esteemed vegetable is economically or extravagantly grown according as it is required in or out of season. If sown in March, pricked out when large enough into a well-dressed bed to gain strength, and planted out in its final place in June, there is no more trouble required to grow cauliflowers than cabbages. It is only when sowing in frames and protecting under hand-glasses are resorted to, for the purpose of producing early maturity, that the thing becomes extravagant, because of the labour necessarily expended on it. Many vegetables are of the same nature; if we were content to have them in their natural season, they would cost us but little; but to obtain them out of season much labour and expense is frequently incurred. Sow, therefore, on a warm border in March. In April they will be large enough to prick out, three or four inches, or say six inches, apart; these will have attained such strength in June as to be planted out in their final destination in the garden, and come in well for use in the fall of the season. If you sow on a slight hot-bed in January, and when large enough prick them out in a frame, but without much heat, and bring them well forward by April and May to plant out, you may get them much earlier. If you desire to have plants to grow through the winter, sow in August, prick out where they can be covered with a garden-light, and stand protected all winter; but the strongest may be planted out under hand-glasses, three or four under each glass. In this case, great care has to be taken about keeping the glasses down in cold weather, and during heavy falls, and taking them off altogether, or tilting them, in any mild weather. As they grow large enough to crowd each other under the glasses, take away the weakest, and plant them out in the open ground, leaving only one, or perhaps two plants, to complete their growth, under each hand-glass; as they show their flower the leaves should be bent down, to keep the sun off, that the colour may not be injured. Cauliflowers should be planted out as a general crop two feet apart one way, and eighteen inches the other; but under hand-glasses there must be room for the hand-glasses to be taken off and placed in the row when the plants are at their largest size. The best sorts are Walcheren, Asiatic, and Early.

BROCOLI.

Here is a varied and an excellent crop, and occasionally a cheap one. It is, however, one which no poor man ought to trust. Of the varieties choose Grange's early white, Chappel's cream, Somers's superb, Chappel's white Roman, Purple cape, White cape, and Early sprouting. The latter is the most useful. From January to June this vegetable might be sown every month, pricked out six inches apart as soon as it is large enough, and planted when strong enough. In this way brocoli is obtained from various sowings and plantings all the latter part of the summer and through the autumn and winter, unless it be very untoward weather. The sprouting sort is a very delicious and economical vegetable; it eats well with anything, gives a good supply for a long period, and requires but little labour. The best season for sowing all the sorts is February and March, half each month. As soon as they have four rough leaves, prick them out in an open space, six inches apart, taking the strongest plants from the seed-bed each time; you will thus get several different seasons out of each sowing.

As soon as they have attained the necessary strength, begin to plant some out, either between crops of other things that are coming off, or in quarters devoted to them; but we are always anxious, as a row of anything is off that will admit of being replaced, to get something on the ground. Brocoli thus put out in a moderate garden, as room is made by other things coming off, must come in well at some time or other, and if one season misses all cannot. As soon as the plants which are put out for good, begin to grow, the earth ought to be drawn to the roots, and after this, little or no care is necessary.

ENDIVE.

This is a hardy salad, and may be cultivated in small quantities with advantage, sown in April, May, and June, and planted out when large enough on a bank sloping to the south: it is a fine wholesome salad with beet-root and lettuce, or with red cabbage. When the plants are large enough these must be blanched by tying them up like lettuces, or by laying tiles or slates, or flat pieces of board, on them: one foot apart all over the bed would do for distance at planting out, and it is very little trouble.

SEA KALE.

Another luxury; little or no trouble when cultivated for its proper season, and only costly when forced. For instance, many acres are grown that are merely put out in rows and earthed up. When the sprouts come forward they break the earth on the surface, the cultivator then removes the earth low enough to enable him to cut off the shoots down clean to the crown of the plants. Here, as neither fire-heat nor dung is used, it cannot be said to cost much. The proper mode of cultivation is to sow the seed three or four in a spot, these spots being eighteen inches apart in the rows, and the rows three feet apart. When they have vegetated, keep the strongest and take away the others, which may be transplanted in continuation after the same plan, and, if carefully done, will not be much behind those that have not been disturbed. They may grow on for three seasons with nothing more than the earth drawn up to the roots, and being kept clear of weeds. Now if you have large flower-pots, or kale-pots, they may at Christmas be covered over the individual plants, and be surrounded by dung from the stable or leaves, the plants will shoot much sooner than if they were only earthed up; but the least trouble is to earth up the rows into a flat-topped bank by digging an eighteen-inch trench between the rows and putting the soil that comes out upon the plants, covering them eight inches. In the spring the plants begin to shoot, and when they break the surface it is known that the shoots are long enough for the purpose, and that they may be uncovered and cut, but those under the pots covered with dung or leaves will have been forward enough to cut weeks before. Sea kale, however, is not an economical vegetable, because the ground, like an asparagus-bed, is occupied the year round for one crop. This can be in part counteracted by cropping between the rows as soon as the kale is cut, for the bank is then levelled, the plants allowed to grow till the autumn, and all this time lettuces may be planted out and got off the ground; or spinach, or a couple or three drills of turnips sowed directly the kale is done with, will come well into use before the plants need be earthed up again.

CUCUMBER AND VEGETABLE-MARROW.

If you can sow in a hot-bed a few seeds of cucumber and gourds to use as vegetable-marrow, and have a spare place in a south border to plant them, the chances are that you get a good supply of both. Sow them in April; grow them singly in pots till the second week in June, stopping the shoots at the second joint; plant them out in June, and there will be a good recompense for your trouble. The vegetable-marrow must not be allowed to grow too large; they ought to be eaten before the seeds are formed: while young they are like marrow, but after a certain age they become a mere jelly, and when they lose their firmness and swell they are watery, faint, and unwholesome.

LETTUCE AND OTHER SALADS.

Lettuce, corn-salad, small salad, and other herbs for the same purposes, may be sown each month, but corn-salad is by far the most economical of all the small salads, because you keep picking from it the leaves, and they grow again continually. Lettuces, both the cos and the cabbage sorts, may be sown on a warm border in February, March, April, May, June, and July, and in frames, or with some protection, all the rest of the months. They may be watered and drawn out for planting according as they get strong enough, and ground is vacant. There is no season to regulate their growth any more than their consumption, but it may be taken as a general rule that the cabbage kinds are the most hardy, and do with least trouble all through winter, and that, as they want protection, even when sown in February, in an open border, the best way is to sow them with onions for pulling young, and with radishes to draw young, and the same litter that covers for one will cover for all. Lettuces ought to be planted out a foot apart in the row and eighteen inches from row to row. Radishes, like other salads, may be sown every month, if the demand warrants its being done, but in the summer time so many things crowd in upon the gardener that he hardly knows what to be at, so that he ought well to study not only the most useful vegetables, but also those which are longest in perfection when once produced.

PEAS.

Here we have a keeping as well as a perishable stock. It is not the most desirable crop for persons of limited means, but it is to be taken into consideration that what are not eaten green are good dry; there is no reason why a man should not grow his peas for soup as well as his celery, and no dry peas can be better than those he saves and ripens himself. It is a general notion that peas are not split for soup and puddings, till they are too old to grow, and it may be readily supposed that what a man grows himself he can depend on. There is no difficulty in bruising peas, and new ones shall swell better, and taste better, than old ones. Peas, therefore, may be looked upon in the light of a double crop, if wanted, or a safe crop if saved all for harvest. Of the hundreds of varieties in cultivation many have very equal claims; novelty may do something for a pea, and, of course, there are some which have both novelty and excellence to recommend them: we have found all the following to be good: — Cormack's Prince Albert, Shilling's early grotto, Flask's victory, Ward's incomparable or British Queen, Knight's improved dwarf green marrow, Groom's dwarf, Waite's Queen of the dwarfs, Girling's Danecroft early, and Imperial. The Early frame, Charlton, and many others, are, however, still favourites. Peas may be sown from November to July every three weeks, but it is for a man to consider whether he ought to devote much or little ground to a crop which, if eaten green, is a luxury of some cost, and if saved dry may cost more than they could be purchased for. However, there is a great fault among pea growers; they sow the seeds much thicker than they ought to be sown, and therefore waste a great deal. Peas ought to be sown in drills, and if there were half the quantity usually sown the crop would be heavier; when up above ground, earth ought to be drawn up to their stems; the soil bruised and closed about their roots, and brought up to a kind of bank on the cold side of them; sticks should be placed to them at the same time, and after this they only require to be kept clear of weeds and in parching weather to have water.

RHUBARB.

This has become so general a favourite from its wholesomeness and flavour, in seasons when fruit cannot be had, and is moreover so strongly recommended to families, that a portion of the garden ought to be devoted to a few good roots—a dozen will be found enough for a moderate family, and they ought to be two feet from each other every way. The ground should be well dressed, the plants young, the season autumn. They should be planted without bruising their roots, and they will do all the rest themselves. If wanted earlier in the spring than they will come naturally, put a box, or rather a wooden trough, two feet high and one foot diameter, over a plant, cover the open end that is uppermost with a flat tile or a proper cover, and surround the whole with dung or leaves; it will hasten the growth: or pot up a strong root or two and put them in a warm cellar, or a kitchen-cupboard, or a greenhouse, or any other place where the temperature is raised; but it is never so good as from the natural ground, grown in the natural way.

SPINACH.

The winter spinach is the most useful and economical, and is as good in summer time as in winter. The difference between this and the round-leaved is, that the winter kind takes longer to perfect the plant and seed it than the round-leaved does, and, therefore, it is longer eatable. It is not pulled up as one half the spring spinach is, but the leaves are picked off from time to time as they grow, and a good bed of spinach yields for a long time. The round-leaf spinach will be better for the same treatment, and looks much larger for it, but it is not so long in perfection. Spinach of either kind may be sowed in drills eighteen inches apart any season, but it is usual to sow the round-leaf from January to July, and the prickly, or winter, from August to October. If it comes up too thick, pick out some when they are large enough to eat, and thus thin it, when you can use the surplus.

GENERAL OBSERVATIONS ON GENERAL SUBJECTS.

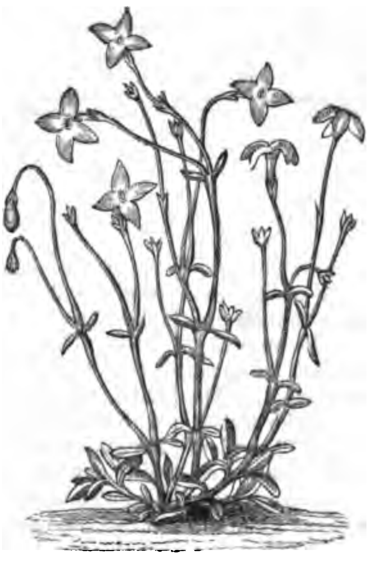
Many other subjects might be mentioned under separate heads, but we have gone through all that concerns those who wish their gardens to be usefully productive; we have not devoted a chapter to the herb bed because it is so very simple, and forms a subordinate part of the establishment, though highly useful. It is not very difficult to procure a plant or two of sage, mint, thyme, marjoram, and other herbs; and very little of these will do for a large family. Parsley is a more generally useful herb, and is raised from seed; any of the perennial herbs will tear to pieces and strike like weeds; and parsley should be sown twice or three times a year, and any root whose leaves are not double and curled, should be pulled up. There are many subjects in a garden that we have not mentioned: we have not touched on fruit; our sole object has been to treat of those things which are more or less necessaries, or profitable stocks, and, although we have treated of several things that a man may cultivate as luxuries, no person with limited means ought to lose sight of the one great object of appropriating every rod to something that he can sell if he cannot eat it, or that he can keep for a considerable time if he can neither sell nor eat it. These will be found to have been mentioned pretty nearly in the order of their importance, taking into the account their value as stock or their saleable nature as merchandise, for such, in truth, food as well as raiment is, and when a man can choose the stock he will produce, he ought to be doubly considerate how he misapplies a rod of his ground.

A gardener is none the better for wanting extravagant implements, but proper ones he ought to have, for being obliged to make shift with one thing for another is a sad loss of time. Hoe, rake, fork, spade, garden line, knife, good strong box-barrow, broom, basket, and dibble; all these things are necessary. There is also a proper way of keeping them; they need not be all in morocco cases and mahogany boxes, but at the same time we should like to see them taken somewhat more care of than our artist has bestowed on them. To be plain, a gardener, like a prudent housewife, should have a place for everything, and everything in its place, when not in use.

HEDYOTIS CŒRULEA.

(Hooker.)

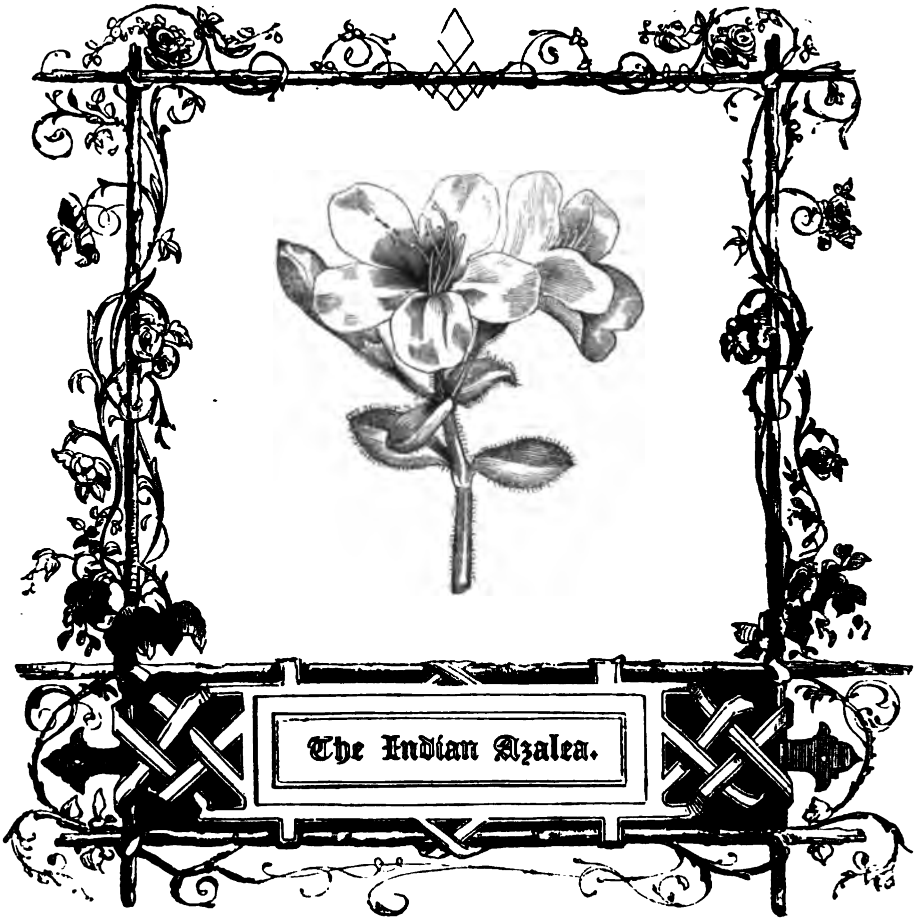
BLUISH-FLOWERED HEDYOTIS.



This little subject will be more generally known, perhaps, under the name of *Houstonia cærulea*, which it bears in many gardens. It is a neat little plant, of the class known as "alpines," a name given to plants of this habit by gardeners not so much to indicate that they are natives of alpine districts, as simply that they are minute perennials, suitable, from their small size, for pot-culture or rock-work, and, indeed, requiring some such aid to bring them, as it were, within the range of the eye. The term itself was no doubt suggested by the fact, that the majority of the plants so classed do really inhabit alpine districts, and, in many cases, this is indicated by their bearing the specific name of *alpina* in direct allusion to this fact; and so it became applied as a collective designation to all such cultivated species as would agree with them in general appearance and in cultivation. Alpines may be considered then as minute herbaceous perennials; there are a few shrubby plants—of minute proportions too—which associate with them, but they are exceptions, and consist chiefly of *Azalea procumbens*, and one or two species of Salix, or willow, and Rubus, or bramble.

Hedyotis cærulea is a small tufted plant of three or four inches high, with numerous erect, spreading, forked stems, spathulate or ovate root leaves, the upper ones being ovate-lance-shaped, and small salver-shaped flowers, the lobes or divisions of which are acute; the colour of the flowers is of a light bluish lilac, and they are produced in succession from May till August. It was introduced in 1785, from North America; and Virginia and Canada are particularly recorded as its localities. It has received many names besides that here adopted, among which are *Houstonia cærulea* (Linnæus), *H. patens* (Elliott), *H. pusilla* (Don), and *Anotis cærulea* (Don). There is a recorded variety in which the blossoms are white; both are neat and pretty plants.

When grown in small pots, the compact tuft which it forms, freely studded with blossoms, is far from inelegant; and it is best adapted either for pot-culture or for placing in the front part of rock-work where it will be near the eye. It is of course hardy, but if grown in pots would require to be slightly sheltered, as with other alpines. A sandy peat soil suits it; the plants should be potted at the latter end of summer, they have then time to get established before winter, and throw out strong blooms in the succeeding season.


The Indian Azalea.

THE INDIAN AZALEA.

Of all the beautiful plants brought from China, perhaps nothing upon the whole beats the *Azalea indica;* not if we look to the original species or varieties perhaps, because they were inferior to their progeny, but we mean taking the family as we now possess it. The yellow, the purple, the white, and the scarlet, were very grand, but very faulty. The splendid varieties, however, produced from seed, deserve universal adoption as conservatory plants. There are scores, perhaps hundreds of varieties now, but looking to the properties, there are, perhaps, nearly a dozen of great beauty, and possessing excellent points. The grand improvement was thickness of petal, for, without that, the colours looked watery, and the flowers soon faded. There is evidently a connexion between the rhododendron and the azalea, for they have been crossed with the greatest advantage. In fact, all the azaleas, deciduous and hardy, as well as tender and evergreen, seem capable of intermixing, and the result has been some very splendid varieties. The most hardy of the Chinese kinds is, the *Azalea sinensis*, a deciduous shrub, with bright yellow flowers, very superior to the American varieties, and able to stand a little frost. The *Azalea indica* is totally distinct from all the rest of the azalea and rhododendron tribe. The flowers are nearly funnel-shaped, with divided edges and sharp points; and we have not yet seen any disposition to amalgamate with any but their own peculiar kinds. The varieties alba, phœnicea and coccinea—white, purple, and red—have, by crossing, produced all shades, from white to deep purple, and from white to deep red, and some variegated with spots and stripes exceedingly fine. The most conspicuous among the present favourites are, Gledstanesii, Variegata, Danielsiana, Coccinea, Præstantissima, Splendens, Lateritia, Murrayana, and one or two others, either not named, or not yet in general cultivation. A collection of these, with the most remarkable of the few retained for their colour, rather than any other quality, would be all that can be required for a beginner who wishes to advance. These are generally purchased in small pots, and should be grown with great care, and apart from any of the common sorts which are now spreading abroad in all directions, under all sorts of names.

SOIL.

The best soil in which to grow this plant is decayed turfs, decayed melon bed, and turfy peat. This will be found generally light and rich, and well adapted to the wants of the plant. The turfs should have been cut from a meadow of which loam forms the upper spit, and should be cut about three inches thick, so that all the fibry matter of the roots as well as the grass itself should be included. One half of this passed through a coarse sieve that would let a marble through, one fourth decomposed dung from the melon bed, and one fourth peat earth also rubbed through the sieve, will be found excellent compost. Should it, however, in consequence of the quality of the loam, which cannot always be controlled, seem too adhesive to allow of the water passing through freely, add a little silver sand; but it is very unlikely that this will be required. Into pots a full inch larger all round, or, which is the same thing, two inches wider across the top, shift the plants as soon as the roots reach the side of their first pot, the chance of which is, that they want it immediately, but the perfection of this compost is merely well mixing it, so that it shall be all alike, and laying it in a heap till wanted.

POTTING AND SHIFTING.

On turning out the balls of the earth they first arrive in, you will observe whether the roots have reached the sides. In most cases, the nurserymen keep plants in the smallest sizes they can, for convenience; and therefore, you mostly find the roots matted so completely round the side of the pot as to require immediate change. Let your pots be very clean, if not new: place a few crocks at bottom, and a lump of the turfy peat that would not come through the sieve upon the crocks; then a little of the soil, enough to lift the plant to its proper position. It is the best way to put a sort of cone of the soil, because by pressing the plant down, it will give way, and the height is easily adjusted. The surface of the ball of stale earth should be rubbed off a little, but not low enough to touch the fibres or damage them; and the old drainage or crocks that may stick to the ball may be taken away, unless the fibres of the root are among them. The ball thus prepared, may be placed in the centre of the fresh pot, and pressed down till the collar of the plant is just even with the proposed new surface. The mould should be put in all round, and be gently pressed in with the finger as you fill. The plant will then be in the centre, and the mould must be filled so as just to hide the ball of earth about the plant. The plant may now have a little water to settle the earth about the roots; and the pot may be placed in a cold frame, shut up for a day or two, and then, according to the weather, be exposed to the air and warm rains, or closed against heavy falls and frosts. There is no way of growing these plants better than in a cold frame or pit, if there be a capacity for keeping the frost out, for that is the only thing that is required. Nevertheless, they grow well in a moderate greenhouse, and seedlings are always pushed on as fast as possible, for the sake of seeing what sort of flowers they produce. If a plant is wanted large, it may be easily grown in the stove or propagating house; and it has been found that they bear a considerable degree of heat without materially suffering, except, perhaps, that they may be drawn up rather, more for want of the air than from other cause, and that want of air applies to all artificially heated houses, because the admission of air lowers the temperature so much that it is rarely practised to an extent that is serviceable, on account of its waste of heat. The Azalea can be grown rapidly in heat, and if it be moderate, and air given frequently, nothing is easier than to raise the temperature so high as to enable us to admit air, to bring it to the proper heat. For beauty, however, and healthy growth, we recommend the greenhouse temperature; and as soon as the roots reach the side of the pot again, there must be another shift into a larger sized pot: so much for potting and shifting. But, in the mean time, the plants want

GENERAL MANAGEMENT.

It depends altogether upon the style of plant you want, how you manage them from the first growing. If it were the intention to let them grow naturally, they would require watching, and where any vigorous shoots appear inclined to take the lead of others, they must be cut back; but the principal cultivators have got into a habit of training this beautiful plant very artificially, and the judges at horticultural shows have been encouraging that peculiarity. We allude to the ungardener-like mode of making only one front to a plant. The fancy for distorting subjects that naturally grow elegant, has been too much promoted by the horticultural societies. The branches have been twisted and turned to all manner of shapes, to bring the flowers into the front. Props are placed in all directions; the back of the plant is a series of ties, and sticks, and battens, like the back of a scene in a theatre, and as ugly. If the determination is to form these half plants, the only proper way is to do all the distortion while the plant is growing, for of a bad business it is making the best. We are no friends to distortions of any kind, we only recognise proper, legitimate, natural modes of growing plants. Nature will sometimes make a standard, and at other times a bush of the same kind of plant, and we care not how we see a plant grown, so that it imitate nature, even if it be in some of her freaks. But to have a plant that is naturally a bush forming a flat shield, out of all character, and with a mass of flowers but no leaves in sight, on a dead flat surface, resembling nothing in nature, is to us a bore. We have no objection to growing the azalea as a standard, as a tall shrub, or a dwarf bush; all these may be formed by nature herself, and, consequently, there is no harm in following her in her most rare and beautiful works.

TO FORM A STANDARD.

Select a plant with one good upright stem, however many lateral branches may be growing out of it. Cut off the lower lateral branches close to the centre stem; as the plant is shifted and grows taller, so others of the lateral shoots may be taken off; and every two or three lateral branches that come out at the top will enable you to remove lower ones, until the head of the plant is all new growth, and continues to grow upwards. Of course the lateral branches removed, must be cut very clean and neat from the main stem, which must be free from spurs or snags. There must always be left a few branches towards the top, but the object being to gain height, the vigour of the plant must be thrown into the top branches, and as soon as the lower ones can be spared, have them off. So far as this goes, the plant need only be shifted as often as it fills the pot with roots, and continued in its growth. If the main stem exhibits any weakness, fasten it to a good upright stake thrust in the pot. When it has arrived at about the height you require, take off the top, and shorten all the side shoots. This will occasion lateral shoots to grow from all the shortened branches, and upon the choice of these, or such of them as are best adapted to form the permanent branches, depends much of the beauty of the future tree. In the next growth, therefore, of these shoots, such of them as cross each other, or grow inwards or upwards, may be either shortened or taken away altogether. The object is to leave branches growing outwards on all sides, and to shorten them where you want side shoots to thicken the head; but as side shoots will grow naturally, even when the main stems are not shortened, we should always allow for a little thickening. Upon the natural habit of the plant depends how large the head may be grown. Some are of a weeping habit naturally, and make but a small head; others more robust, are enabled to form a good bold tree-like head, and according to their size ought their height to be regulated. Standards have been made for weeping roses and cytisus, not inapplicable to these, something like the skeleton of an umbrella, in iron; by this means, the first or main branches would be supported, and the pendent shoots, falling over it, and beyond it, would look very graceful. But many of the varieties of *Azalea indica* are robust enough to require no help beyond an upright to support the stem. The great object is to so form the main branches of the head, as to enable us to prune and regulate every year directly after the bloom, so that the new growth shall form always a pretty nearly close head of foliage, every point of which, if properly managed, will set for flowers while the standard is growing; after losing the lateral shoots below, small shoots will come out all up the stem. These must be rubbed off as they first form, but there will be no difficulty about managing the head according to the taste of the cultivator. No head ought to be smaller when full grown, than the diameter the same as the length of the upright stem; in other words, just as much across from one side of the head to the other, as the stem is from the pot to the under side of the head.

AS PYRAMIDAL, OR NATURAL BUSHES.

In this case the plant to be selected should have a leader, and be allowed to grow its own way, except that when any shoot is more vigorous than the rest, and seems inclined to take more than its share of nourishment away from other parts, that shoot ought to be shortened very materially, or cut clean away, according as the space it occupied required it or not; at all events it must be shortened far enough back to allow of its more vigorous lateral shoots growing without disturbing the form. If any branches cross each other or come too thick, there is no harm in cutting some clean out. Some kinds are naturally tall growing,—the three original kinds are,—and it will require but a short time to grow phœnicea, alba, and coccinea, six feet high, if it were desirable; but while we recommend the pyramidal, we object to rapid growth. We dislike the one-shift system, we object to heat; to be growing freely and healthily is all we care about; shifting them from time to time as they fill their pots with roots, and watering, covering or uncovering them at proper times, so as to give them all the benefit of air, proper moisture, and protection from cold winds and frost, are all that we care about.

AS DWARF BUSHY PLANTS.

This, which we fancy before the last for beauty, is as simple as either of the others. The plant should be stopped as soon as it is obtained, or one should be selected that is already bushy, and been served so. All the while the plant is growing the shoots are to be stopped as soon as they push much; but it must be taken into consideration that many grow naturally in a bush, and these are most likely to want pruning out instead of shortening. Variegata, Lateritia, Gledstanesii, Smithii, and some others, are naturally low growers, and are almost too confused unless they are rather thinned out; and as it is a good rule to shorten nothing until it is too long, care need only be taken to take off any shoots that are too vigorous for the rest, and thin out some when they are too thick. Changing the pots goes on alike in all cases, and in that of dwarf plants it may perhaps be necessary to obtain tall pots, because the plants very often spread out and hang over very considerably. They are then required tall for the sake of appearance, as well as safety or ease in handing them about: we have often had the weaker kinds hang half way down the pot, and have seen the necessity of obtaining some made taller in proportion.

BLOOMING AND SETTING FOR BLOOM.

After the Azalea has done flowering, you should pick off all the buds, unless you desire to save seed; but if seed is the object, let the plants have all the mild air they can, all the warm rains, and be merely protected from heavy rains or other falls. Nothing ever answered our purpose for these and other hard-wooded plants so well as removing them into the tulip-house, when they were sheltered from the wind and violent rains by only rolling down the canvass roof, or shutting down the side canvass blinds. However, as everybody has not got a tulip stage or canvass house, and may not be inclined to get one or a substitute for it, they may be placed inthe most sheltered part of the garden, or in the greenhouse, but shaded at the top. Out of doors is, however, the best in a sheltered spot, if the saving of the seed be an object. It is, however, doubtful if the bloom will set well after the seed has all ripened. It exhausts a plant much more to save seed than any body is aware of. Those from which no seed is required should be stripped of every pod as soon as the bloom in the least declines, so as to be done with for its flowers. It will immediately set off growing without further care; but if on examination of the roots they are found to be close to the pot, and inclined to be matted, they may have another shift into a pot of larger size before they make their new growth. While they are progressing they should have plenty of moisture; as soon as they have perfected their growth they should rest, and have much less water and more shade. In the absence of any other convenience, a shady place in the garden and a canvass roof put up in a temporary manner, will be of great use in turning off the wet and keeping off the sun. They have to be placed in a cold pit all the winter, but one that can be covered up effectually against the frost and high winds, hail, rain, &c. They may be removed to the greenhouse, or a warmer birth still, if they are required to flower early; but as the difficulty is generally how to keep them back for the shows, we never remove them from the pit unless it is to a cold greenhouse. They will flower abundantly without forcing, and last four times as long in bloom as if they were flowered in heat.

PROPAGATION BY CUTTINGS.

This is a very simple process: take off cuttings of the present year's growth, and place them in a pot, the top half inch of stuff being pure silver sand, the lower portion being the stuff they grow in; take the lower leaves off the cuttings and stick them into the sand, so as just to touch the other soil, cover them with a bell-glass, which must be wiped clean every morning, and apply moisture to the cuttings, so that they shall never get dry. As soon as they are struck, which will be indicated by their growing, they may be potted off into the smallest sized pots, one in each, and after waiting a while in the frame, covered with a hand glass, they may be removed into the greenhouse, or into a pit, to grow and establish themselves. In striking cuttings it must be remembered that a slight bottom heat will hasten the operation, and so far may in some cases be useful. The best time for cuttings is in the spring, for the shoots that have no bloom, and in autumn for the last growth; but young wood will strike almost any how and at any time.

PROPAGATION BY SEED.

The seed is gathered when indicating ripeness, and laid by in the dry and warm house all the winter. Take a wide mouthed pot in spring, with the stuff we grow the plants in, and having first levelled the surface, sow the seed thinly, and sift some mould very lightly through a fine sieve to cover the seed. Cover the seed with a glass and place it in the greenhouse or propagating house, or, for want of a better place, a common garden frame. As soon as the seedlings are large enough to handle, prick them outin a number of pots, a full inch apart, and replace them in the greenhouse;

cover each pot with a bell-glass, to keep off the air and draught till they are established. When these grow large enough to nearly touch one another, let them be potted off singly in thumb-pots, and place them again in the greenhouse; here they may be established; but they will be fit to turn out into the frames, where they may undergo their shift from one sized pot to another until they arrive at the blooming period. All this time they are not to be pruned nor checked, but left to grow as they may, for the purpose of showing their natural habit. All the flowers that are not better than those we possess already should be discarded at once, so as not to fertilize others with their secondary qualities. Save none but those with petals thick, smooth, and of fine texture on the surface, flowers round, slightly cupped, and no apparent indenture on the edge; colour either new or good in either case the flower would be acceptable.

MANAGEMENT OF AGED PLANTS.

In pruning old plants there should always be some of the old wood that is most in the way cut out, and this should be done rather freely upwards, but remove nothing low down, if there is a shoot of green upon it; by using the knife freely higher up the plant, good shoots will come from below, but if the stems be healthy and bare, let them be budded and grafted, and as a fancy thing, there may be several kinds budded or grafted on one stock. If there be a good upright stem that would do for a standard, cut away all the rest of the shoots from it up to the height you wish to have the stem, and retain all the branches you can to form, or towards forming, the head; upon every one of these branches, or upon alternate ones, graft or bud some distinct variety, or any one variety of which you desire the tree to be thereafter composed; or, if all the lower portions of a plant are ugly and bare, cut the plant down and graft or bud all the ends as well as putting a bud close to the bottom of every branch; the buds and grafts will grow rapidly, and in one season there will be a completely renovated plant. If the variety be a favourite one the grafts may all be of the same; but the old wood will not always break when cut down, so that grafting and budding is the only way to make sure. A good old plant, however, will often give one good stem for a standard, and that is the most desirable thing to make of it.

PROPERTIES.

1. The flower should be round, composed of five divisions, though only one petal; and the indentures, where they join, should be so small as not to materially interrupt the circle.

2. The petal should be thick, and of course to be round the ends of the divided portions should be blunt, lap over each other, and be free from notch, serrature, or blemish.

3. The flower should be large and slightly cupped; the colour should be distinct, dense, and if a self, alike in all the petals, or rather the divisions.

4. If variegated, the colours should be distinct, and, if spotted, the spots should be so much darker than the other colour as to form a strong contrast.

5. The leaf should be bright green; the plant shrubby, the wood or stems strong, to stand without support, and short, to form a compact bush.

The great faults of the present favourite varieties are flimsy, pointed flowers, weak stems, straggling plants, dingy foliage; and, beautiful as they may look, they can be improved greatly in two years. The two years are up, and some very beautiful varieties fully realize this prediction.

MONTHLY DIRECTIONS.

January.—Now we have young seedlings in the greenhouse, and the general stock of older plants in cold frames, pits, or a house kept cool on purpose. The former, that is to say, young seedlings, not being so robust, must have air admitted very carefully, and, unless the weather be very mild, sparingly; for cold winds (that would not affect older plants) would injure them. The plants in pits and frames must be well protected from frost by covering, but in mild weather may have the glasses entirely removed, and air should be given at all times when there is no frost.

February.—Examine the roots by taking out some of the balls of earth, and if the fibres are matted round the side of the ball, give them larger pots, carefully filling the earth round the ball, and shaking it well down, and if necessary pressing it down with a bit of wood. You may safely increase the size two inches in diameter. Stir the surface of the soil in all those that do not require shifting. If the fibres of the seedlings in the house have reached the pots, give the plants a shift to one a size larger. Sow seed; they now begin to require watering.

March.—The buds are now swelling for bloom, and wherever plants are subject to stronger light on one side than the other, turn the plants daily that they may flower all round alike. If any are trained with their branches to show but one face they must be examined, and any branches that are loose should be tied carefully into their places, because all plants are now growing, and the face can never be made good afterwards if it be not done while growing; nothing makes a plant look worse than any tying that shows the backs of the leaves; and when a branch is turned out of its natural position it will do so for days. Look well to watering; sow seed if not sown before.

APRIL.—Many flowers are now opening, and seedlings which do not bloom are growing fast; look to shifting all that require it, which can be told by taking one or two out of the pot, the ball of earth being kept entire. The blooming plants must now be shaded from the extreme heat of the sun, as it would hasten the flowers too much, and make their period of perfection very short. Turn all the naturally grown plants daily, that the light may have equal influence all round; look well to the watering.

MAY.—The plants are now in perfection of bloom, and require only shading and watering to keep them so as long as possible. Seedling plants will keep on growing, and may require removing to larger pots; they may be taken from the greenhouse to the pits or frames at the end of the month, and have all the air that can be given them. The seed sown in February will be up, and perhaps large enough to prick out, for they should be put out as soon as they are large enough to handle well. They should, after pricking out, have a hand-glass put over them, although they are in the greenhouse. Select the best, and throw away the useless varieties among blooming seedlings.

JUNE.—Prick out seedlings, remove the plants that have done blooming into the shade and shelter. If the form of the plant requires any correction, use the knife. If the branches are too thick, there may be here and there one removed. The decayed blooms may be all picked off, unless the seed is wanted, in which case the plant may be put out of doors just as it is. The plant will grow fast, and when any of the branches are too vigorous, shorten or stop them, because as the plant is allowed to form so it sets its bloom, and any alteration then removes the flowers.

JULY.—Attend to the advancing seedlings. They must not be too wet; but by no means must they be neglected, as a short time without necessary moisture would kill them. The hand-glass may be removed from the small seedlings in the greenhouse, as they will require air. Attend to the necessary shifting of growing plants. The larger plants have made a good deal of their growth, and require great attention to the watering.

AUGUST.—Continue the treatment of last month. Keep the established plants that have now made their growth, or nearly so, in a cool place still. Shift all the seedlings that may want it; and if the young seedlings are large enough, pot them off in sixty sized pots, one in a pot. Pick the seed pots, if ripe.

SEPTEMBER.—The plants may now be placed in their winter quarters. The surface of the earth should be stirred, and a little fresh earth be put with it to fill the pots up properly, and they must have only as much water as will keep a little moisture in the compost. This must not be done by giving little at a time, but by doing it less frequently. The seedlings as last month. Pot off all that are not already potted.

OCTOBER.—No plants require much less care in winter. Keep them from frost and excess of wet, and they are almost sure to do well. Deep pits, or the greenhouse, will do for the largest, a common frame will do for the smaller ones, and the shelves at the top of the greenhouse will do for the young seedlings.

NOVEMBER.—Nothing more than giving plenty of air, little water, and keeping them clean, are now required by the Azaleas. Seedlings that are growing very fast will require examining occasionally to see that the roots do not fill the pot, and to give them timely shifts into those of a larger size. The frames and pits should be kept dry and clean, free from dead leaves and weeds.

DECEMBER.—Continue last month's treatment, attending to the wants of seedlings in small pots, because they soon dry and damage; change their pots as often as they require it, and keep them growing. The greenhouse is an excellent temperature in general for seedlings that have not arrived at blooming size and age, for they keep growing all through the winter.

DESCRIPTIVE LIST OF INDIAN AZALEAS.

The blooms of the varieties of *Azalea indica* are usually more or less spotted on the upper segment of the flower, sometimes on the three upper ones. Most of the annexed descriptions have been taken from plants produced at the different metropolitan exhibitions.

Agnesii; colour light scarlet, slightly spotted; flowers small, with broadish segments.

Alba compacta; colour white; flower moderate size, of good form; better than ledifolia.

Alba magniflora; colour white, delicately marked with a few streaks of rosy purple; flowers large, with rather long segments.

Armosa; colour light rose, very slightly spotted; flowers large, with broadish segments, but not forming a compact flower.

Aurantia major; colour light coppery red; flowers large and loose.

Beauty of Reigate; colour white; somewhat streaked and blotched with red; flowers above medium size, with broad short segments, forming a circular outline to the flower: a good variety, but hardly distinct enough in colour from Gledstanesii.

Bianca; colour pure white; flowers small, with broadish segments, but not of good form.

Broughtoni; colour light rosy pink, well spotted; flowers large, with broad, roundish segments, and of good form.

Carminata; colour fine dark red, or carmine; flowers large, with broad roundish segments.

Catleughii; colour clear light scarlet; flowers medium size, with broad segments, forming a roundish and nearly circular flower.

Coccinea (Smith's); colour light red, with a purple tinge, and a few faint spots in the upper part; flowers small, with broadish segments.

Concolor; colour uniform light rose, with a few faint spots at top; flowers moderate size, with broadish segments.

Conqueror; colour pale vermilion red, with a few purple spots; flowers large, with broad roundish segments, but not forming a compact circular flower.

Correafolia; colour rose pink, with a few faint spots; flower small, with narrow segments.

Danielsiana; colour light vermilion red, with a few faint spots on the upper part; flowers medium sized, with long narrow divisions; habit slender.

Decora; colour purplish rose; flowers small, with narrow segments.

Delicata; colour salmon pink, with a few purple spots; flowers medium sized, with long broadish segments, somewhat undulated.

Duke of Devonshire; colour light scarlet red; slightly spotted flowers, rather above medium size, with broad rounded segments.

Emmelina; colour pale vermilion red, flowers very large, with broad rounded segments.

Expansa; colour purple rose, tinged with pink, the upper segment decidedly purplish, and spotted; flowers large, and very loose, with long narrow segments: worthless.

Exquisita; colour deep flesh, irregularly margined with white, and beautifully and thickly marked in the upper part with dark spots; flowers large, with broadish segments; not, however, forming a circular flower: one of the handsomest.

Exquisita alba; colour pure white, unspotted; flowers large, with rather long, broadish rounded segments.

Erecta; colour rosy; flowers moderate size, with broadish segments.

Fielder's white; colour white, with a greenish stain on the upper part; flowers large, with broad rounded segments.

Formosa; colour bright red; flowers large, with broad rounded segments.

Formula elegans; coloured light red: bad.

Gledstanesii; colour white, with a few dashes and stripes of rose; sometimes the stripes are absent; flowers medium sized, with short round segments, forming a close circular flower: one of the best varieties yet produced.

Gledstanesii formosa; colour white, streaked with red; flowers medium sized, and well formed; very near Gledstanesii.

Gloriosa; colour purple, spotted with red; flowers moderate sized.

Herberti; colour light rose, spotted; flowers very large, with broadish segments; showy, but rather loose.

Ignescens splendida; colour dull vermilion red; flowers small, with broadish rounded segments.

Impressa; colour light red: bad.

Iveryana; colour pure white; flowers large.

Juliaii (?); colour light vermilion red, with a few spots at top; flowers large, with long broadish segments; not of a circular outline.

King of Saxony; colour light vermilion red; flowers moderate size, with broadish segments.

Knightii; colour dull rose-pink, decidedly purplish, and spotted on the upper part; flowers moderate sized, with long narrow segments.

Lateritia; colour, pale vermilion red, entirely without spots; flowers medium size, with broad, close, rounded segments, forming a compact circular outline; habit slender.

Lateritia pulchra; colour a fine clear purplish rose colour, with a few very faint spots; flowers large, with broadish segments.

Ledifolia (Indica alba); colour white, upper segment with a yellowish stain; flower medium size, with long broadish segments.

Leucomegista; colour white, with a broad stain of lemon colour in the upper part; flowers large, with broad rounded, somewhat undulating segments.

Macrantha purpurea; colour purple, with very dark spots in the upper part; flowers very large and loose, formed of long, broadish segments: very showy.

Magna; colour purple, well spotted; flowers very large, with broadish segments.

Magnifica; colour light rosy pink, purplish, and spotted in the upper part; flowers large, with roundish segments.

Minerva; colour light brightish red, faintly spotted on the upper part; flowers large, with broadish segments.

Mirabilis superba; colour light rose: bad.

Munda; colour light pinkish red, with purple spots; flowers medium sized, with broadish segments.

Murrayana; colour bright rose, slightly spotted; flowers large, with broad, rounded segments.

Notabilis; colour light purple, slightly spotted on the upper segment; flowers hardly medium size, with long acutish segments.

Obtusa; colour rich vermilion red, slightly spotted; flowers small, with narrow segments; a Chinese variety or species (?)

Optima; colour light rich red, clearly spotted on the upper part; flowers large, with broad rounded segments: a very fine variety.

Pallida; colour very light purplish lilac, with a few buff spots on the upper part; flowers small, with narrow segments.

Pallida; colour light rose; flowers very large: bad.

Palmerii; colour light rose, with a few spots; flowers large, with roundish divisions, but not forming a circular outline.

Phœnicea; colour purple, furnished with spots on the upper part; flowers large, with long narrowish segments.

Phœnicea alba; colour white, with a greenish tinge in the upper part; flowers large, with long acute broadish segments.

Præstantissima; colour pale pinkish red, well spotted; flowers large, with rounded broadish segments: a very free bloomer.

Pride of Dorking; colour pure white; flowers medium sized, with broad short segments forming a circular outline; one of the best formed of the whites.

Pulchra; colour pale purple, with clear distinct spots on the upper part; flowers small, with narrow but not long segments.

Punctata; colour light red: bad.

Purpurea grandiflora; colour light purple, well spotted on the three upper divisions; flowers large, with broadish segments, but not much rounded.

Purpurea plena; colour pale purplish lilac; flowers small, formed of numerous narrow petals or segments: a very old variety.

Purpurea superba; colour light purple, spotted; flowers large.

Rawsoni; colour pale purple, with a few spots at top; flowers small, with narrow segments.

Refulgens; colour brilliant light red, slightly spotted; flowers large, with broadish segments, but not forming a circular outline.

Retorta; colour bright rose, with few spots; flowers large, with rounded segments.

Rosea delicata; colour light rose, with few spots; flowers large, with long narrowish and somewhat acute segments.

Rosea elegans; colour pale clear rose-purple, slightly spotted; flowers large, with broadish segments.

Rubens; colour dark vermilion red, the upper segments with a purple tinge, and slightly spotted; flowers medium sized, with long narrowish segments.

Rubescens; colour light vermilion red; flowers moderate size.

Rubra-plena; colour light vermilion red; flowers medium size, with narrow segments filled up in the centre with irregular narrow petals.

Semiduplex pura; colour light rose: bad.

Semiduplex purpurea; colour purplish rose: bad.

Semiduplex rosea; colour light rose: bad.

Semiduplex striata; colour rosy pink: bad.

Speciosissima; colour light rosy pink, spotted on the upper part; flowers large, with broadish segments: showy.

Splendens; colour rosy pink, the upper part with a purplish tinge, and a few faint spots; flowers large, with broad rounded segments.

Storeyana; colour pure white; flowers medium size: inferior to ledifolia.

Striata formosissima; colour white, streaked with red; not so good as Gledstanesii.

Striata purpurea; colour white with a few faint streaks of purple; flower medium size, with narrowish loose undulating segments.

Triumphans; colour light rose, the three upper segments with a thick cluster of deep coloured spots; flower large, with broad rounded segments.

Variegata; colour flesh, irregularly margined with white, and a few faint spots on the upper part; flower medium sized, with broad close rounded segments, forming a compact circular outline; habit slender.

Vesta; colour pure white; flowers moderate size, with broadish segments.

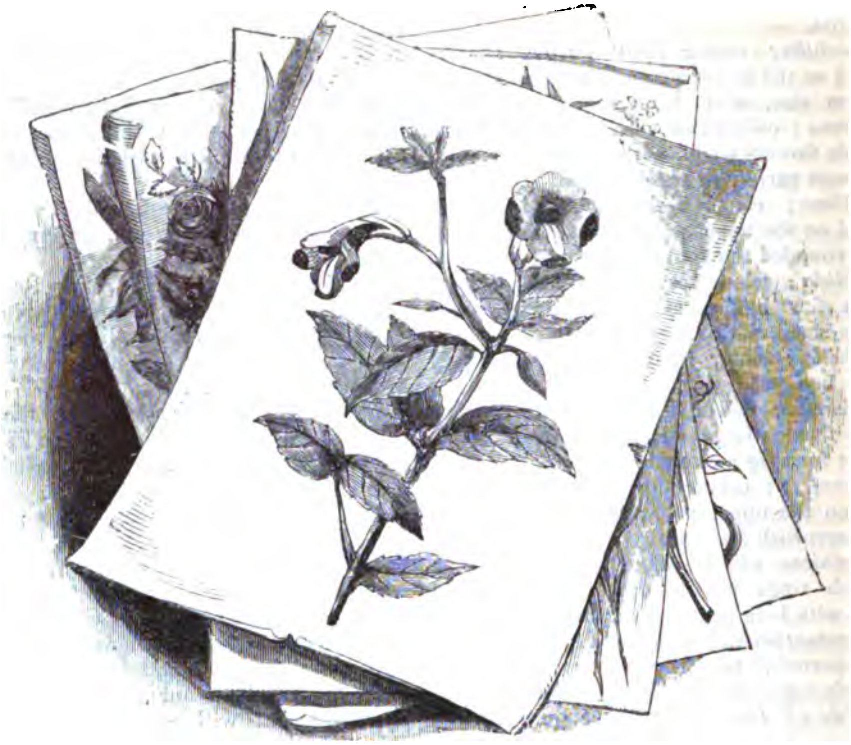
Violacea elegans; colour lively purple; flowers medium size, with long narrow segments.

Vivicans; colour bright clear rose, with a few spots on the upper part; flowers large, with long pointed segments.

Woodsii; colour light purple, the upper segment thickly spotted with dark purple; flowers medium size, with broad segments, but not forming a circular flower.

Six of the very best of the above would be found in the following, viz., Gledstanesii, Lateritia, Variegata, Triumphans, Optima, and Refulgens.

The sorts of *Azalea indica* recommended in the *Garden Almanac* as the best, are Prestantissima, Variegata, Murrayana, Gledstanesii, Splendens, Lateritia, Danielsiana. There is a large white one grown at Falkirk far superior to our ordinary Alba. We should grow *Azalea sinensis* among them, most assuredly, and do our best towards seeding from it after cross fertilization; it would probably originate some handsome varieties.



TORENIA ASIATICA.

(Linnæus.)

ASIATIC, OR LARGE FLOWERED TORENIA.

To this pretty genus of plants we have recently had some accessions, which will become valuable ornaments of our gardens. The best, in every respect, is that of which an engraving is here introduced: nothing can exceed it in the richness and the softness of its colouring.

In noticing this plant on a former occasion, (*Annals of Horticulture,* ii. 553,) we took the opportunity of expressing a doubt whether the statement that the plant was an annual was strictly correct. The statement was made in the *Botanical Magazine,* where a beautiful figure of it was published last year. Nothing in the appearance of the plant, at the time our notice above referred to was written, would seem to warrant the belief that the plant was annual, and our further experience of it does but confirm our former supposition: hundreds of plants raised from cuttings last year, along with calceolarias, cupheas, and similar sub-shrubby plants, have been preserved through the winter, and planted out into the flower garden; and the old plants which blossomed last season are now vigorous, and blossoming freely again. It was, moreover, said to be a stove plant, but this, too, is incorrect; for it has been preserved during winter in the temperature of a greenhouse, and has been grown and flowered well in such a situation. Moreover, experience has shown it to be a plant suitable for bedding out in flower gardens, though here, we presume, it will always be found to do best in the warmest situations, all other conditions being equal.

The plant is of diffuse branching habit, with quadrangular, flexuose stems, bearing opposite ovate, or ovate-lanceolate, coarsely serrated leaves, from the axils of which other branches, and towards the tips of the shoots numerous flowers, are produced; the flowers grow on separate stalks, but sometimes several—three or four—together, from the same axil; they are shaped something like the flowers of a mimulus, only they are divided into four instead of five lobes, the lower of which, and the two side ones, each bear a large deep purple blotch, and the throat, or centre, is of the same colour; down the centre of the lower segment is a pale streak; the rest of the flower is a clear, soft, porcelain blue-lilac, of indescribable tint. It is a very free flowering plant, blooming throughout the summer and autumnal months.

Viewing the extensive range which it occupies in a wild state, one would be prepared to find it possessing much hardihood of constitution, even though it be East Indian. It is recorded as growing throughout Bengal, in Amboyna, Ceylon, Mergui, Chittagong, Sylhet, and in the Madras peninsula. It is also widely diffused in alpine regions, and hence our success in cultivating it in a low temperature.

The plant is easily cultivated in any light rich soil, and propagates with the utmost facility by means of cuttings. Probably its beautiful tint of colour will be best brought out and preserved by affording it some shade from intense sun-light.

We may take the opportunity of again mentioning *Torenia concolor* (Lindley), as a handsome species. It appears to be of a more trailing habit than *T. asiatica*, and its flowers are of a uniform violet colour, except the throat, which is deeper tinted. Mr. Fortune found this growing in marshy ground, on the mountains of Hong-Kong, where it bears much cold and drought in the winter season, but grows and flowers profusely in the hot damp months of summer. In this country, it should be treated during the growing season as a half-stove plant; and it requires a trellis, unless the pot be elevated, and the branches are allowed to become dependent.

FLOWERS AND PLANTS OF SCRIPTURE.

UNDER this title we reviewed Lady Calcott's admirable work, written under great bodily infirmity and suffering, but, nevertheless, produced in a way that did great honour to the head and the heart of the fair authoress: we adopt the same head for a review of the noble volumes lately published under the title of the "Cyclopædia of Biblical Literature;"* because, although it touches upon every subject mentioned in the sacred book, flowers and plants form a considerable portion, and belong especially to us. The work has been produced with great labour; the contributors comprise a host of talented men, and the manner in which each subject is handled shows a degree of research and labour scarcely surpassed by any modern writers. In fact, as we are told in the preface—

"It was no task for one man to gather in this great harvest. And as the ground seemed, for the most part, common to all Christian men, it appeared desirable that assistance should be sought from a sufficient number of competent Biblical scholars, and others, without distinction of country or religious party, that the field might be the more thoroughly swept, and the greater wealth of illustration obtained from men of different lines of reading, and various habits of thought. The prompt manner in which the call of the Editor for co-operation has been met by the numerous eminent Biblical scholars and naturalists, whose names appear in the List of Contributors, has been amongst the highest gratifications arising to him out of this undertaking; while the ability, the laborious research, the care and the punctuality, with which they have discharged the various tasks confided to them, demand his warmest acknowledgments."

Without touching upon theological points, which we leave to those who read the work, we are bound to say, that a more valuable accumulation of facts, touching natural history, cannot be found, than are now before us. The writers may be all called great men, close reasoners, full of sound argument; and, for the most part, they draw conclusions perfectly convincing. We will not pretend that we agree with all they say, nor do we altogether exculpate some of the writers from a charge of elaborating too much upon trifles, or things of small importance; but with all the imaginary, and a few real faults, it is one of the most able productions of modern times. The principal portion of the articles on flowers and plants, if not the whole of them, are by Professor Royle. Perhaps no subject has given rise to more speculation than the lily, mentioned by our Saviour in his sermon on the mount: and we are sorry that Professor Royle persists in the extraordinary delusion that Christ referred to *some one species*, when it is plain to any man of common sense, or should be so, that our Saviour applied the language to all: "Behold," says he, "the *lilies* of the field how *they* grow, they toil not, neither do they spin;" yet, in the teeth of this passage we find commentators haggling with one another as to which *one species* could have been meant. We have hardly common patience with those who fancy they show their talent by disputations as unprofitable as they are groundless. However, let us do the writer justice; there is a vast deal of information in his general articles: take, for instance, that on the melon, from which we select a few passages that more immediately concern the lovers of a garden, while we omit the more learned portions that relate to the translation of particular words, and the reconciliation of partial facts, which we look upon as very immaterial.

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* A Cyclopædia of Biblical Literature. Edited by John Kitto, D.D., F.S.A., Editor of "The Pictorial Bible," Author of "The History and Physical Geography of Palestine," &c. &c. Illustrated by numerous Engravings. In Two Volumes. Adam and Charles Black: Edinburgh.

" The Cucurbitaceæ, or gourd tribe, are remarkable for their power of adapting themselves to the different situations where they can be grown. Thus, Mr. Elphinstone describes some of them as yielding large and juicy fruit in the midst of the Indian desert, where water is 300 feet from the surface. Extreme of moisture, however, is far from injurious to them, as the great majority are successfully cultivated in the rainy season in India. Mr. Moorcroft describes an extensive cultivation of melons and cucumbers on the beds of weeds which float on the lakes of Cashmere. They are similarly cultivated in Persia and in China. In India, 'some of the species may be seen in the most arid places, others in the densest jungles. Planted at the foot of a tree, they emulate the vine in ascending its branches; and near a hut, they soon cover its thatch with a coating of green. They form a principal portion of the culture of Indian gardens; the farmer even rears them in the neighbourhood of his wells.' (Royle, *Himalayan Botany*, p. 218.)

" These plants, though known to the Greeks, are not natives of Europe, but of Eastern countries, whence they must have been introduced into Greece. They probably may be traced to Syria or Egypt, whence other cultivated plants, as well as civilisation, have travelled westwards. In Egypt they formed a portion of the food of the people at the very early period when the Israelites were led by Moses from its rich cultivation into the midst of the desert. The melon, the water-melon, and several others of the cucurbitaceæ, are mentioned by Wilkinson (*Thebes*, p. 212 ; *Ancient Egyptians*, iv. 62), as still cultivated there, and are described as being sown in the middle of December, and cut, the melons in ninety and the cucumbers in sixty days.

" If we consider that the occurrences so graphically detailed in the Bible, took place in the East, we should expect, among the natural products noticed, that those which appear from the earliest times to have been esteemed in these countries, would be those mentioned. But as all are apt to undervalue the good which they possess, and think of it only when beyond their reach, so the Israelites in the desert longed for the delicious coolness of the melons of Egypt. Among these we may suppose both the melon and water-melon to have been included, and therefore both will be treated of in this article."

" All travellers in Eastern countries have borne testimony to the refreshment and delight they have experienced from the fruit of the melon. But we shall content ourselves with referring to Alpinus, who, having paid particular attention to such subjects, says of the Egyptians, 'Fructibus, &c. se replent, ut ex iis solis sæpe cœnam, vel prandium perficiant cujusmodi sunt precocia, cucurbitæ, pepones, melopepones; quorum quidem nomen genericum est Batech.' (*Rerum Ægypt. Hist.* i. 17.) He also describes in the same chapter the kind of melon called Abdellavi, which, according to De Sacy, receives its name from having been introduced by Abdullah, a governor of Egypt, under the Khalif Al Mamoon. It may be a distinct species, as the fruit is oblong, tapering at both ends, but thick in the middle; a figure (tab. xli.) is given in his work, *De Plantis Ægypti ;* but Forskal applies this name also to the Chate, which is separately described by Alpinus, and a figure given by him at tab. xl."

" The water-melon is clearly distinguished by Alpinus as cultivated in Egypt, and called by the above names, 'quæ intus semina tantum, et aquam dulcissimam continent.' It is mentioned by Forskal, and its properties described by Hasselquist. Though resembling the other kinds very considerably in its properties, it is very different from them in its deeply-cut leaves, from which it is compared to a very different plant of this tribe—that is, the colocynth. 'Citrullus folio colocynthidis secto semine, nigro.' A few others have cut leaves, but the water-melon is so distinguished among the edible species. The plant is hairy, with trailing cirrhiferous stems. The pulp abounds so much in watery juice, that it will run out by a hole made through the rind; and it is from this peculiarity that it has obtained the names of water-melon, melon d'eau, wasser-melon. Hasselquist says that it is cultivated on the banks of the Nile, in the rich clayey earth which subsides during the inundation, and serves 'the Egyptians for meat, drink, and physic. It is eaten in abundance, during the season, even by the richer sort of people; but the common people, on whom Providence hath bestowed nothing but poverty and patience, scarcely eat anything but these, and account this the best time of the year, as they are obliged to put up with worse at other seasons of the year.'" (*Travels*, p. 256.) J. F. R.—Pp. 4—6.

The article Garden is treated with considerable power, and the authorities referred to are too numerous for us to notice; some of the information is new and curious. After noticing the various allusions to gardens, the writer proceeds to inform us that—

" Gardens were dedicated to various uses among the Hebrews, such as we still find prevailing in the East. One most essential difference between them and our own is, that they are not attached to, or in any way connected with, the residence, but are situated in the suburbs. We have known gardens from half a mile to a mile distant from the houses of the persons to whom they belonged. It is manifest that all the gardens mentioned in Scripture were outside the several towns. This is, however, to be understood of regular gardens, for shrubs and flowers were often planted in the open courts of the dwelling-houses.

"People repair to their suburban gardens to take the air, to walk, and to refresh and solace themselves in various ways. For their use there is mostly in each garden a kind of summer-house, or pavilion, fitted up with much neatness, gaily painted, and furnished with seats, where the visitants may sit and enjoy themselves."—Pp. 735, 736.

In this article we have an account of the various kinds of gardens, and the uses to which they were put. How they were made by the side of, or near streams, for the sake of irrigation; we have, also, examples of the different modes of applying water, and of procuring it; the plan of raising it from wells by levers, after the fashion adopted to the present day in many nursery-grounds, was a very ancient practice; but there were rills for water formed all over the garden, and when it was raised, it was poured into these, to run wherever the place was left open, and was, by the simplest means, stopped out of one set of rills, and directed into another. The following notions will rather surprise those who have not already been made acquainted with the circumstance by reading :—

"The Jews, in their ceremonial treatises, have frequent occasion to mention gardens, chiefly for the purpose of showing what plants or seeds might or might not be planted or sown together under the law against heterogeneous propagations. (Lev. xix. 9; Deut. xxi. 9, 11.) From this source some curious facts relating to the arrangements of gardens may be gleaned. The following are from the Mishnic treatise *Kilaim*, which is devoted to the general subject: 'Trees must not be grafted on trees of a different kind, nor one kind of shrub on another kind of shrub, nor yet trees on shrubs, nor shrubs on trees.' Rabbi Jehudah, however, sanctioned this last practice. 'Shrubs must not be planted in a sycamore-bush; rue must not be grafted on white cassia, because that would be a shrub on a tree; a scion of the fig tree must not be planted among *chatzub*, (supposed 'ivy,') to cool it; a vine branch must not be sunk (trained) into a melon bed, to instil its juices therein, because that is a tree on a plant; pumpkin-seed must not be set among mallow, in order that it may be preserved therein, as that is herb in herb.' 'In a garden-bed, that is six hands square, five different kinds of seeds may be sown, namely, four kinds in the four corners of the bed, and a fifth in the centre. If the bed has a ridge (border), thirteen different kinds may be sown, three in each corner, and one in the middle of the bed.' 'All kinds of field-seeds must not be sown in a garden bed; but all kinds of herbs (garden-seed) may be sown therein.' 'A ridge (border) that had been one hand high, but is decreased in height, still remains good, because it had been originally of lawful height.' This applies, of course, to the ridges by which different plants which might not lawfully mingle were separated. 'In a trench, or dry kennel, one hand deep, three different kinds of seeds may be sown, namely, one kind on each side, and one kind in the middle.'

"It is very evident that where such careful distinctions and rules of separation existed, great attention must have been required to the means of dividing the different plants from each other. This was effected not only by ridges and trenches, but by light fences of cane. This apppears from what follows: 'A partition of cane is considered a fence, provided the space between each cane is less than three hands wide, so that a young kid cannot pass through. If there is a breach in the fence to the extent of ten amoth, it is considered as a gate (entrance). Should a greater portion of the fence be broken down, it is unlawful to sow or plant towards the breach. If there are several breaches in the fence, should the portion still standing be greater than that broken down, it is permitted; but should the portion broken down be greater than that standing, it is forbidden.' These examples are selected only as specimens of the endless modes by which the later Jews sought to carry out with minute and impossible exactness the useful regulation of the Mosaical law. For that law various reasons have been given, on which we are not required to pronounce any judgment; but it appears to us that the economical grounds which may be collected from the effects which appear to result from the interdicted practices, are quite sufficient in themselves, whether others exist or not. Thus we find enumerated among the radical defects of Hindu husbandry —'the barbarous system of sowing two or three species of grain in one field . . . . The mode of reaping is equally defective; if two or three species of grain are sown in the same field, the Indian husbandman treads down a great part of his crop, in order to collect each kind separately; indeed, so fond is he of this method of proceeding, that he pursues it even when the crop is all of one kind, that he may select what he deems the ripest.' (Tennant's *Indian Recreations*, in *Edinb. Review*, iv. 320.)

"There is no reason to suppose that the gardens of the ancient Jews differed in any material respect from those which are still found in Palestine. Such difference as did exist was doubtless occasioned chiefly by the minute rules which were founded upon the law forbidding the intermixture of diverse plants and seeds. The gardens of the Holy Land have been mentioned by travellers in terms too vague and general to afford the basis of a satisfactory description. Dr. Olin seems to have paid most attention to them. Of the gardens near Shechem, he says, 'Upon turning an angle in the steep gorge, we found ourselves, as if by enchantment, in the midst of fruitful gardens filled with vegetables, flowers, and fruit-trees, and all in the highest perfection of luxuriance and beauty. Olives, vines, acacias, pomegranates, figs, mulberries, and several species of trees which I did not recognise, are crowded together in small enclosures, forming an impervious shade, as well as an impenetrable thicket; and yet the capabilities of the soil seem not to be overburdened. Each separate tree and plant thrives to admiration, and seems rather to profit than suffer from the thick dark canopy of branches and foliage, which entirely excludes the sun's rays from the tangled huddle of trunks and roots. A beautiful mountain stream runs through the midst of this forest of gardens, in a channel mostly artificial, and sometimes covered; but the water often rises into small fountains, and forms several cascades.' (*Travels in the East*, ii. 350.) The orange and citron trees, which abound in these gardens near Shechem, (see Schubert, *Reise ins Morgenlande*, ii. 116,) were probably those not recognised by Dr. Olin, from their not being in fruit at the time of his visit."—Pp. 736, 737.

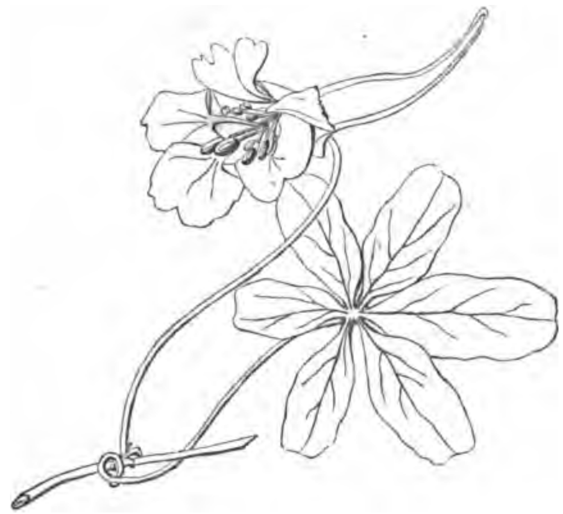
Geometrical gardens were not, it seems, unknown, nor unappreciated by the ancients, but we are not quite sure they were contrived after our present notions. It would seem they approved of large gardens being laid out so, while we rather limit a geometrical garden to a space that the eye can command at once, with all the figures displayed, at a glance; as if their whole gardens must be uniform, instead of the eye wandering over rich landscape, and falling upon a well-managed figure, like one of the views in a kaleidoscope, in some pleasant nook, which is our notion of the place for a geometrical garden. Upon this subject the author says:—

"'The ancient plans of gardens show that the Egyptians were not less fond than our ancestors of mathematical figures, straight walks, architectural decorations, and vegetable avenues; and that they as thoroughly entered into the idea of seclusion and safety suggested by enclosures within enclosures. It has been remarked that, in some old English places, there were almost as many walled compartments without, as apartments within doors; and the same may be said of Egyptian country houses. This principle of seclusion, and an excessive love of uniform arrangement, are remarkably displayed in the plan of a large square garden, given in Professor Rosellini's great work, *I Monumenti dell' Egitto*. Here—

"Grove nods at grove, each alley has a brother,
And half the platform just reflects the other."

This royal garden must have formed a most enviable retreat from "the intolerable day" of an Egyptian summer. The whole was shut in by an embattled wall. On one side, a canal runs along just without the walls. In the centre of the enclosure is an oblong walled vineyard; the vines, planted in rows, or avenues, are trailed above on trellis-work, forming shady arched walks. The space on one side this central vineyard exactly corresponds to that on the other. In each there is a row of palms, an oblong tank with water-fowl, four flower-beds on a lawn, and an open summer-house on the margin overlooking the pool; an oblong walled compartment of trees; a second tank with water-fowl and flowers; and all along within the wall of circuit, a row of trees, of three kinds, in regular alternations. At one end of the garden, next the entrance, is a building containing apparently one large room, perhaps for the royal entertainments; at the other end, or back, is a house of three stories, which commanded a view of the whole. This garden, with its sheltered walks, its groves and tanks of water, its seclusion and privacy, reminds us of the "fair garden" of Joacim at Babylon, with its baths, its deep shady coverts, and its "privy gate," in the apocryphal story of Susannah.'"—P. 737.

We shall close our quotations here, for we have given enough to show the nature of those articles which belong peculiarly to our subject. The articles on natural history, geology, entomology, and the arts and sciences of the ancients, are exceedingly clever and deeply interesting, and the embellishments are numerous, well executed, and elaborate. We therefore commend Dr. Kitto's volumes; they present a rich intellectual treat for the inquiring mind; indeed we hardly know where else to look for so large a proportion of amusement and instruction, combined, too, as the whole range of subjects necessarily are, with much that is calculated to improve not only the mind but the heart.



TROPÆOLUM SPECIOSUM.

(Pœppig.)

THE BEAUTIFUL INDIAN CRESS.

THE family of Indian cresses is in high favour in our gardens. About a score species are known and cultivated; and if in comparison some of these may be held—as they rightfully are—to be superior in beauty to others of their congeners, on the other hand, there is not a known species which can be regarded as anything else than an epitome of gracefulness and elegance. Even the common kind, *Tropæolum majus*, the nasturtium of the kitchen garden, is a gorgeous plant when clothed with bloom, as it is during great part of the summer. Another annual and smaller, though similar kind, *T. minus*, is equally beautiful, and still more elegant. The yellow-fringed annual kind, *T. aduncum*, known commonly in gardens as the canary-flower (and hence, erroneously called *T. canariensis*), is one of the gayest of rapid growing summer climbers. Then everybody who knows anything of ornamental greenhouse plants is familiar with the perennial, or tuberous-rooted kinds which are usually cultivated there in pots, and their branches trained over ornamental trellises: there is *T. tricolor* with its horn-like flowers of scarlet, orange, and black; *T. brachyceras*, with yellow blossoms, and *T. azureum*, with flowers of a soft bluish tint; these are each of slender habit, with deeply divided leaves. Rather more vigorous is the *T. Moritzianum*, which has elegant red and orange flowers; and still more robust is an eatable-rooted kind—(most, if not all, are so employed by the South Americans of their native countries)—called *T. tuberosum*, which produces roots as large as ordinary sized potatoes, but requires to be planted in gravel, and placed in a hot sunny exposure to cause it to develop its floral beauty.

The structure of the flowers of Tropæolums is somewhat singular. They have a calyx or outer covering of five segments, and this part is lengthened behind into a more or less developed organ which is called the spur; within the calyx is a corolla of five petals, and, of course, within these, the anthers and pistil. Owing to a remarkable difference in the degree of development in the calyx, the corolla and the spur, there is, to a superficial observer, perhaps, as much diversity in the appearance of the flowers of different species of the genus as can be found in any family of the same extent. In the common garden nasturtium, for example, the calyx and spur are but moderately developed, whilst the petals being highly developed, a large wide open blossom is the result; and the spur is not very obvious except on a side view. In the case of *T. brachyceras* and *T. azureum*, the spur is still less developed compared with the size of the petals. In *T. tricolor*, on the other hand, neither calyx nor petals are very evident, but the spur is highly developed, and appears to constitute the entire blossom: in this case, an entirely different appearance is produced. So also in the case of *T. aduncum*, in which, while the spur is present and hooked, the two upper petals are large and conspicuous, the three lower ones being so small and narrow as to be almost unobserved. This diversity of appearance, no doubt, forms a recommendation additional to their intrinsic beauty.

Tropæolum speciosum is the most recent introduction to our gardens. It is a very distinct and very handsome kind. The habit is climbing, branching, and moderately vigorous, in the way of *T. pentaphyllum* and *T. tricolor*. The leaves are formed of six leaflets or lobes, arranged on the stalks so as to become, in general outline, nearly what is called peltate* or shield-formed; these leaflets or lobes are obtusely-oblong, and slightly mucronate, and they are, moreover, hairy beneath; the anterior segment is nearly twice as large as the posterior one: at the base of each footstalk is a pair of small three-cleft stipules. The blossoms are large—upwards of an inch in diameter—and entirely red; the spur is long and slightly curved: the petals, which are of a very rich crimson red, are singularly formed; the two upper are very narrowly wedge-shaped, the three lower ones consist of a longish slender thread-like claw, with an expanded blade, squared at the base, and slightly lobed and rounded at the apex; the effect of these oddly-shaped petals is very singular and distinct. The flowers are very freely produced, and, doubtless, as in the other kinds, may be had almost at any period of the summer, according to the period when the plants are set growing; during the present year, which is the first of its blooming in this country, the plant has been well furnished both in June and July. On its native hills it blooms in February and March.

Messrs. Veitch and Son, nurserymen of Exeter, are the fortunate possessors of this elegant species: they have, indeed, been particularly successful with the family, having previously, and within a comparatively recent period, introduced three other very ornamental kinds, especially *T. azureum* and *T. Lobbianum*. We are indebted to them for the materials from which the accompanying sketch and description have been prepared. They received living plants in the autumn of 1846 from Mr. William Lobb, who discovered it in the Andes of Patagonia, near the snow line. It has bloomed with them for the first time in England during the present summer, and is found to be a plant of vigorous growth and an abundant bloomer. It is probable that, like *T. pentaphyllum*, which it a good deal resembles in habit, it will prove nearly hardy; that is to say, its tuberous roots will most likely live through the winter in light soils and in dry situations, with the slightest possible surface protection, such, for instance, as that afforded by a layer three inches thick of dry sawdust, or of short loose litter; and in the spring would throw up their young stems with remarkable vigour.

We have but little else to add respecting it. It belongs to the natural order Tropæolaceæ; and most probably will prove to be one of that group of species of which *T. pentaphyllum* is the type, and to which the name of Chymocarpus has been applied. It is one of the most elegant novelties of the present season.

PRACTICAL EDUCATION.

THERE are some branches of knowledge which ought to be common to all classes, and the sooner all men attain it the better. The chances of emigration from choice or necessity should induce men to teach their children all the ordinary operations connected with the productions of the vegetable world. No man should be ignorant of what is called kitchen gardening, and cheap lessons on that subject are both plentiful and easily understood. The practical part of gardening can only be known by practice, but all the practical rules may be so engrafted in the mind of a youth, that practice will come easy when occasion calls for it, and more especially as from the time he learns to the time he practises for himself he can hardly go for an ordinary walk without seeing some operation going on in suburban gardens. That gardening is a profession requiring a man to acquire a vast store of information, and long practice, to become master of it, is true enough, and we do not pretend to make light of such acquirements, nor do we contemplate any instruction that would qualify ordinary people for any of the higher walks of the profession, but we would teach everybody enough to enable them to grow their own necessary food, in the same way that we would teach anybody to read and write without the least intention to finish a scholastic education. When a man can dig, plant, sow, and reap his harvest, or gather his ordinary produce, we would leave him to take his chance of any further advance, but up to that we would have the knowledge of gardening grounded in him as well as his reading and writing, and thus, according to Abercrombie's notion, make "every man his own gardener."

It may be that gardeners will fancy this rather an attack upon their interests; quite the reverse, however, is the fact. None are so well able to appreciate the services of a gardener as those who occasionally do the work themselves; if the learner of gardening become wealthy he makes a better employer, for there is no task so irksome as to serve an ignorant man. The very best places are those in which the owner takes an interest in the science, and can judge of a man's labour, and perseverance, and capacity. In such places you will not find an ignorant head gardener taking all the profits, and the working bees none. It is notorious that many persons who hold head places are only reading and not working gardeners, that they have good working men under them, who find all the practical knowledge, while the head man is indebted to them for the fine condition of the establishment and the liberal supply of productions. This could not be if the employer was a gardener also, for he would not be long in discovering the difference between the man who had the credit without the brains, and he who had to find the brains without having the credit. Therefore would we have a book of instruction used at every school, and the rising generation well grounded in all that could be learned by reading, that each one may be able in future times to know when his garden is well managed and, if necessary, to manage it himself.

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* Roundish, with the stalk attached behind, at a distance from the margin.

CONTEMPORARY WRITINGS,

AND ORIGINAL NOTES, CONNECTED WITH HORTICULTURE.

THE VIENNA MODE OF GROWING ASPARAGUS.—A correspondent of the *Gardeners' Chronicle* states the following to be the mode in which the huge Vienna Asparagus—said to be the best in the world—is grown. The "covering of clay" which is mentioned appears to be an earthenware hollow cylinder, open at one end, and at the other merely pierced with a hole to admit light:—The situation of the beds should be a sunny one, and dry. They should be planted with two rows of Asparagus, if three and a half feet broad, and in three rows, if five feet broad; between each bed there should be a space of three feet, in order that the beds may not be trod upon by the gardener when cutting, or cleaning, or manuring. The beds should be about three to three and a half feet deep, and the earth well screened through a sieve. They should be thus filled early in April:—1. One foot deep fir-leaves and earth, taken from under the trees, or else with wood shavings, rotten wood, or other substance which will allow the water to drain through. And this is to be laid down lightly, not pressed or trodden down. 2. Six inches of clean earth passed through a sieve. 3. Six inches of manure. 4. Six inches of good earth. 5. Six inches of manure. 6. Six inches of fine good earth. The Asparagus must then be planted at distances of two feet upon hotbeds of three inches high, and twelve inches in circumference, formed in the shape of an inverted plate upon the ground, so that the roots may spread all around. These roots are then to be covered with a little more hotbed earth, and the whole bed to be covered with rich earth to a good inch above the tops of the roots, or a foot above the level of the garden; this is necessary, as the beds always sink very much for the first year or two. After being planted, the beds should be gently watered, and as soon as the shoots attain the height of six inches they should have a covering of clay, with a hole at the top of each, big enough to admit of a straw, and the air should be allowed to pass through from underneath. Asparagus should be planted in April, according to the weather, and will, when thus planted, produce for twenty years consecutively, and increase in quantity every year as the roots spread.

MANURE-WATER FOR POT PLANTS.—Many—indeed most—plants grown in pots may, at particular periods of the growth, be advantageously treated with liquid manure; these periods are chiefly during the time of making vigorous growth, and of blooming. Inexperienced persons, however, are liable to do material injury from using it too strong or too often; or they fall into the other extreme, and derive no benefit from the application. A very useful liquid manure for pot plants may be made by putting the following ingredients into a hogshead of rain water:—two pecks of sheep or deer dung, one peck of soot, and two quarts of Potter's guano; these ingredients are first to be well mixed up to the consistence of paste, with boiling water, and then mixed with cold water. Stir the mixture frequently for a day or two, and then throw in a quart of quick lime; when the liquid has become clear it is fit for use. For all strong growing plants this may be used daily, or every other day—applying it diluted with about one-third of clear water. For heaths, and similar delicate-rooted plants, and even for orchids, it will prove beneficial, but to these should not be given oftener than one a week. As before observed, it is only to be used—at least by the inexperienced—during the periods of growth and blooming.

TRAINING CLIMBING PLANTS.—It is not well to interfere too constantly with the growing shoots of climbers, nor to restrain them too much. Of course, such as would naturally grow into an entangled and inseparable mass, must be looked to, so far as to prevent this from being the case; but otherwise this class of plants enjoy their liberty. Depend on it, these scramblers of the jungle do not like too much control from the hand of man. This must not, however, be carried to the other extreme, and so end in disorder and confusion, but rather try and reconcile the two—liberty of growth on the one hand, order and system on the other.

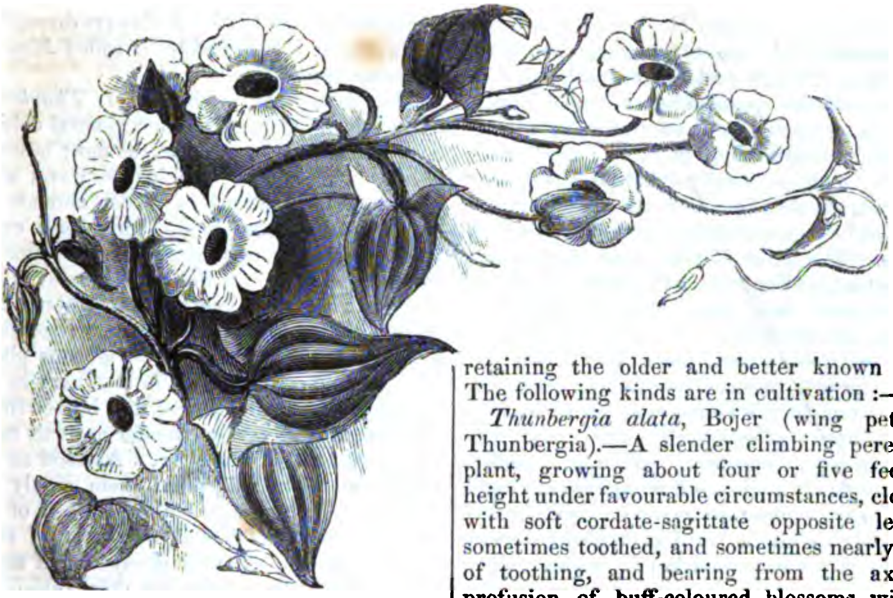
PLANT-POTTING.—Potting is in no otherwise different from planting in the open ground than that it compels plants to grow in a confined space. Therefore, whatever conditions are favourable or unfavourable to plants in the open ground, are so to plants in pots, *cæteris paribus*. The favourable circumstances are—1, a loose soil: 2, a rich soil; 3, a soil well drained. The unfavourable circumstances are—1, a heavy compact soil; 2, a poor soil; 3, stagnant water. The worst mode of potting is that in which finely-sifted soil is *wholly* employed without drainage; a better, but still imperfect mode is, using drainage with a little rough material over it; the perfect mode, as far as we at present know, is securing complete drainage, and using the soil in a rough state, so as to be permeable by air and water. The difficulties—for there are difficuties—connected with potting are,—1, rapid drying, the roots from their tendency to extend outwards being mostly on the outside of the ball at the sides of the pots, and thus exposed to heat and currents of air; 2, exhaustion of the soil from repeated watering, washing out its nutritive particles, a circumstance which takes place exactly in proportion as the plants are well or ill potted. The modes of meeting these difficulties are—1, in regard to drying, to double-pot, as has been sometimes done, to plunge the pots, to keep the plants in the shade, and to employ pots made of hard material, as slate for instance, which does not allow evaporation to go on so rapidly as porous earthenware pots; 2, exhaustion of the soil may be prevented by top-dressing, and keeping the soil in a condition so as only to need a *little* water at a time. The best cultivators, indeed, prefer syringing over-head when practicable; the water that trickles off the branches and leaves being sufficient to keep the soil moist.

Pelargonium Lucia Rosea.—This variety is in its habit and appearance much like one of the class called "scarlet" pelargoniums. It is a very compact growing plant, with short-jointed stems, and good sized leaves, of a soft velvety character. The flower-stems are strong, and grow erect, so that the trusses of bloom are brought well above the foliage; the colour of the flowers is a most delicate soft pink, or peach blossom, with a lovely white eye—altogether a distinct colour among pelargoniums. It is a gem for the flower garden, being not only perfectly distinct, but also superlatively beautiful. Sometimes, when kept in pots, and not very freely grown, we have observed it to produce but small trusses of bloom, but this improves when it is growing freely in the open garden. Probably, however, it may in time be improved on; in the mean time it may chiefly be valued for its novel colour.

Œnothera missouriensis.—This plant forms an excellent May flower for beds; it grows with short stems, which recline on the ground, and produce lance-shaped leaves, and large yellow poppy-like flowers. The readiest mode of propagating it may not be generally known. Three strong old plants taken up and introduced to bottom heat in the month of March, will produce plants enough for a very large mass. They must be struck precisely as Dahlias; one plant will yield thirty or forty sprouts, and they will strike within a fortnight.

Eight Conservatory Climbers.—1. *Combretum purpureum*, or, as it is now called, *Poivrea coccinea*, a half shrubby plant, with oval leaves, and branching spikes of scarlet flowers, with conspicuous stamens; it will flower all the summer by stopping the strongest shoots occasionally. 2. *Echites suberecta*, a beautiful yellow flowering plant, which has generally been grown in the stove, but will answer well for the conservatory by spur-pruning, like the vine; it is a very strong grower. 3. *Ipomœa Horsfalliæ*, a splendid plant, with deeply lobed leaves, and bunches of crimson blossoms; should have a warm close position. 4. *Mandevilla suaveolens*, a very free grower, with hairy oval leaves, and bunches of white deliciously fragrant flowers. 5. *Passiflora racemosa*, a splendid crimson passion-flower, which will flower freely nearly the whole year; does best grafted upon one of the hardier sorts. 6. *Plumbago capensis*, an easily grown plant, with long slender stems, bluntish leaves, and good sized bunches of pale blue flowers; may be had in bloom from April to November, by cutting back some of the strongest shoots in summer. 7. *Stephanotis floribunda*, a beautiful evergreen plant, with dark green shining blunt oval leaves, and bunches of white deliciously scented blossoms; it is a splendid thing when planted out in a conservatory border, and grows very fast. 8. *Tecoma jasminoides*, a very free flowerer upon the young wood from July to the end of October; it has much divided leaves, and bunches of white flowers, with a crimson centre.

Fences for Plantations.—It is well known that thorn or other live hedges do not thrive well on the shady side of plantations, and more cumbrous fences, such as dry stone dykes, are expensive and unsightly. In such cases wire fencing may be employed. The timber used as standards for the wires will cost but little, and may be generally got out of the plantation, if an established one. The wires, staples, and fitting up, cost about 10*d.* per yard. Such a fence is light and neat, and a great saving of land is effected, as the wires can be placed close to the trees, while hedges must be planted far enough from them to be free from the drip of their boughs. Besides this, much shelter is secured in winter and shade in summer for cattle, sheep, &c.



THE THUNBERGIA.

Apart from any inherent elegance of habit, and altogether irrespective of intrinsic beauty, the "climbers" are a class of plants which meet with universal favour. This is, perhaps, owing to a certain adaptability which they possess, and in consequence of which they may always be invested with a certain degree of appropriateness wherever introduced. Thunbergias are of this character.

Most people who are at all acquainted with flowers know something of Thunbergias, one or two of the species and some of their varieties being rather commonly grown. They all possess a certain degree of resemblance, which is apparent in their climbing habit, their more or less heart-shaped leaves variously angled on the margins, and in the form of their blossoms. As moderate-sized climbers for pot-culture, they may be grown with very good effect; they may also be planted as permanent creepers in greenhouses and conservatories; and some of the kinds flourish in favourable situations out of doors in summer.

The genus is not a very extensive one. About nine species are, we believe, cultivated in gardens, and of these some varieties have been produced. The name is given in honour of Thunberg, a celebrated botanist and traveller, and the author of some botanical works. The Thunbergias belong to the natural group Acanthaceæ; and the Linnæan Didynamia Angiospermia. Some of the species are, according to the most modern nomenclature, distinguished by other generic names, which we shall indicate as we come to them; our purpose, however, will be best served by retaining the older and better known title. The following kinds are in cultivation:—

Thunbergia alata, Bojer (wing petioled Thunbergia).—A slender climbing perennial plant, growing about four or five feet in height under favourable circumstances, clothed with soft cordate-sagittate opposite leaves, sometimes toothed, and sometimes nearly void of toothing, and bearing from the axils a profusion of buff-coloured blossoms with a rich black centre; the flowers consist of a tube, which is dilated at top, and a spreading limb of two inches diameter, divided into five nearly equal rounded segments. It is a native of the islands of Zanzibar and Pemba, on the eastern coast of Africa, and was introduced in 1823. It blooms from May to October. There are several very distinct varieties:—*albiflora* has the flowers pure white, with the dark centre; *aurantiaca* has deep orange-buff flowers, dark in the centre; *Fryerii* has the flowers orange-buff coloured, with a whitish centre, and is besides large, and very round and well defined in its outline. These three are the handsomest, and the best of all for common purposes. Besides these there are the following, which are probably varieties of alata:—*Bakerii* with pure white flowers; and *lutea* with pale buff-coloured flowers, whitish in the centre.

Thunbergia angulata, Bojer (angulated Thunbergia).—A slender climbing perennial plant, growing about four feet high, with cordately-triangular, and, in some cases, acutely arrow-shaped opposite leaves, and producing small pale purplish flowers, with a greenish tube; they proceed from the axils. It is not a very showy plant. A native of Madagascar, and introduced in 1821. It flowers from May to September.

Thunbergia capensis, Linnæus (Cape of Good Hope Thunbergia).—A small slender climbing perennial plant, with soft heart-shaped, slightly toothed opposite leaves, and clear yellow flowers, which are represented to grow on very long footstalks from the axils of the leaves. It is a native of the Cape of Good Hope, and was introduced in 1824. It flowers freely during the summer.

Thunbergia chrysops, Hooker (golden-eyed Thunbergia).—A stout growing climbing plant, of a compact and half shrubby sort of habit, producing opposite heart-shaped leaves, with small angular teeth on the margins, and bearing its flowers from the axils; the flowers are large and beautifully coloured, the golden eye is surrounded by a belt of light blue, the five broad outer segments being of a rich dark purple. The habit of this plant is, to a certain extent, suffruticose, and young plants, if kept stopped back, may be made almost to assume the shrub-like character, if they are not grown too strong; older plants, in a free state of growth, assume the climbing character. A native of Sierra Leone, and introduced in 1843. Flowers through the summer months.

Thunbergia coccinea, Wallich (scarlet-flowered Thunbergia).—A free growing climbing perennial plant, growing six or eight feet high, with cordate shining opposite leaves, angular at the base, and having a long point; the flowers grow in drooping racemes from the axils of the leaves, and are of a light scarlet colour, but the petals reflex, as in the blossoms of *Mimulus cardinalis*, which detracts much from their effect. It is a native of Nepal, and was introduced in 1823. It flowers freely towards the autumn. This plant is now sometimes called *Hexacentris coccinea* (Nees).

Thunbergia cordata, Colla (heart-leaved Thunbergia).—A small climbing plant, growing about three feet high, with heart-shaped leaves, and bearing white blossoms during the latter part of spring and the summer. It is a native of Brazil, and was introduced about 1820.

Thunbergia fragrans, Roxburgh (fragrant Thunbergia).—A slender climbing plant, with somewhat rigid stems, growing three or four feet in length, furnished with opposite cordate-acuminate dentated leaves, from whose axils are produced the pure white blossoms. It is a native of the East Indies, and was introduced in 1796. Its flowering season is the summer months, but it is almost perpetually in blossom.

Thunbergia grandiflora, Roxburgh (large flowered Thunbergia).—A robust climbing plant, with branches attaining ten or twelve feet in length, producing opposite angularly cordate leaves, from whose axils are borne the large deep blue flowers, which remain in perfection several days. It is a native of the East Indies, and was introduced about 1820. It flowers during great part of the summer season.

Thunbergia Hawtayneana, Wallich (Hawtayne's Thunbergia).—A vigorous climbing plant, growing ten or twelve feet or more in length, furnished with entire heart-shaped leathery leaves, having from their axils large blue flowers with a yellow throat. It requires to be well established before it produces many blossoms. It is a native of Nepal, and was introduced about 1826. It flowers throughout the summer. This species is called *Meyenia Hawtayneana* (Nees).

The numerous varieties of *Thunbergia alata* are the most suited for general cultivation, and they are, perhaps, the most beautiful of all. They grow well in pots; and along with balsams and various tender annuals and free flowering stove plants they form excellent greenhouse ornaments during summer. For this purpose, as indeed for most others, they are best raised from seeds, although they may be perpetuated by cuttings; seedlings, however, make much more vigorous plants. The seeds should be sown in February in pots of any light soil, and placed in a hotbed frame, along with the various tender annuals raised at that season of the year. As soon as they are fairly vegetated, plant them singly into small pots in a rough soil, composed of two parts of turfy heath soil, one part of sandy loam, and one of well decayed leaf mould. This soil will be suitable for them throughout the different periods of growth. Keep them growing in a hotbed where the warmth is slight, and where a good portion of fresh air can be admitted. They are best kept in a frame in this way until the greenhouse is cleared out in May or June, when they should be taken there along with various other plants to decorate that structure during summer. If no frame can be spared, remove them to a warm shelf in the greenhouse earlier. Keep them repotted frequently, so that ultimately, by the beginning of June, they may be in twelve-inch or even eighteen-inch pots. They must be well watered, and every third watering may consist of clear diluted liquid manure, made either with the drainings of the dunghill or with sheep or deer dung, or with guano or Potter's guano. A very excellent liquid manure for these and other plants may be made as follows:—Take two pecks of sheep's dung, one peck of soot, and two quarts of Potter's guano: mix these first into a paste with boiling water, and then add a hogshead of rain-water. Stir frequently for a day or two, and then stir in a quart of quick lime, and as soon as the water is quite clear, it is fit for use. This water, diluted with about one-third clear water, may be used for plants of all kinds—even orchids will not object to it, and heaths and most hard-wooded plants revel in it; once a week will be frequent enough to use it, except to very strong rooted things, many of which would enjoy it daily.

The plants require a trellis for their branches, and, if they grow freely, they will cover a considerable space. The following is a good mode of trellising these plants. Around the inside of the pot, after the final shifting (the largest size mentioned), place five or six slender green stakes four and a half feet long; set them so that at the top they may be somewhat wider apart than at the base; in the centre place one five feet long: at the top place cross bars fastened to the tops of the other uprights: around the stakes run a slender wire spirally from bottom to top, at about six or eight inches apart, giving the wire a turn round each of the stakes at intervals, to keep them steady. To each of the uprights train a leading shoot, for which purpose the plants must have been stopped, and when these have reached half way up the trellis, stop them, to cause them to throw out lateral shoots, one of which is to be continued as a leader, and the rest trained round the trellis: when the upright shoots reach the top of the trellis, stop them again to produce laterals to fill the upper half.

Seed should be procured for another year if possible; but sometimes this is not very freely produced, so that, to secure it, some of the blooms should be impregnated, and one or two set out of doors when in full bloom in fine weather, and fully exposed to the sun, and then, after the seeds have made some progress, removed back again to the greenhouse to ripen. In case of a failure in obtaining seed, a few cuttings should be planted about August, and set in a cutting-frame; they should be potted into small pots in rather sandy peat soil, and kept during winter in a cool stove, or on a very warm shelf in a greenhouse.

For flowering in the open garden, the plants are best raised from seeds at the end of the previous summer, and kept over winter in a cool part of the stove; then shifted in spring and hardened off, so as to be ready to plant out in May. Much of their beauty depends on securing deep green foliage, and this may be secured by using liquid manure, or manuring plentifully with decomposed cow dung. They require a warm sheltered place.

For planting out in conservatories the plants may be prepared as for the open air; and after planting out, the chief attention required consists in attending to the training of the branches.

Thunbergia Hawtayneana and *Thunbergia grandiflora* are adapted for planting out in conservatories, or for growing in large pots, the branches being trained up to the pillars and rafters; they both of them flourish best in a temperature intermediate between a stove and a greenhouse, such as is usually maintained in conservatories. If they are attempted to be grown on pot-trellises, the latter must be of considerable size. In winter they should be kept cool and comparatively dry, and about the beginning of March should be repotted, and pruned, and set growing in a genial temperature. A rough soil of equal parts peat, loam, and leaf mould will suit them, and they ought to be shifted often for a time until they are placed in their blooming-pots, which should be rather early, so that by their filling these with roots, and thus sustaining a sort of check, they may be thrown into bloom early in the summer. In pruning, thin out the branches well, leaving the best ripened, and moderately shortening them. They must have plenty of light, and an airy place where there is no draught. They propagate readily by cuttings.

Thunbergia coccinea may be managed similarly with the above, or it may be grown in pots and trained on a pot-trellis, in which case one of considerable size is required. It requires a stove; and should be kept cool and rather dry in winter, and well cut back, repotted, and set to grow afresh in spring. Like the others, it should be got early into its blooming-pots, and kept in a light though less airy situation.

Thunbergia fragrans should be grown in a stove during the spring, and then, as its growth becomes matured, removed to a warm greenhouse, where it will flower freely if a warm moist atmosphere is maintained. To the soil recommended for the others add an eighth part of silver sand for this, and repot and prune the plants about the beginning of March, having kept them in rested condition during the winter. This does not require a very large trellis, nor so large pots as the stronger growers.

Thunbergia capensis, *Thunbergia cordata*, and *Thunbergia angulata* may be treated similarly, except that the former does not need quite so much heat, and the latter can scarcely be kept too warm. They are all propagated by cuttings.

Thunbergia chrysops is a free growing plant, for which the mixture of peat, loam, and leaf mould will be suitable. It requires stove-heat in the spring, and may subsequently be removed to a warm greenhouse to flower during the summer. The plants must be kept in rather small pots to induce a free flowering habit, and for the same reason ought not to be fresh potted when the season is much advanced. If the plants are shifted about the end of April, and the pots become filled with roots, the plants may then be expected to bloom with freedom during the months of summer. In young plants much of the climbing habit may be checked by continued stopping and cool regimen, so as to give them a semi-shrub-like character, which they will retain by a continuation of the same kind of treatment, if they are not in other respects grown too vigorously. It propagates readily from cuttings.

Those plants that are grown in pots are benefited by having a slight degree of bottom heat during the earlier stages of their progress;

and it should also be a rule to keep the branches—except perhaps the leading ones, where any particular plan of training is adopted—frequently stopped ; this would tend to check over luxuriance, and favour the production of flowers. Though comparative rest and drought has been recommended as a general feature of winter management, yet there are exceptions to this rule ; thus, for instance, when it is desired to change the period for blooming, the period of growth may be varied accordingly, and when very early flowers are desired, the plants must be in an active state during winter ; this most of the species readily submit to. And even where the winter is, as is natural, appropriated as a resting period, the evergreen nature of the plants must be borne in mind, and moisture must not be so far withheld as to cause them to shed their foliage ; a moderate state of dryness is what is required. In the more active growing period, when the branches require training, it is found that training downwards or backwards is beneficial in promoting a flowering condition : this simple point is worth bearing in mind.

The leaves of all the species are exceedingly liable to suffer from the attacks of a minute insect, called by gardeners the red spider, a species of acarus or mite *(Acarus Telarius)*. When the plants are subjected to a dry atmosphere the leaves soon become infested with these insects, which spread rapidly, and do material injury by eating the under side, which causes them to become spotted and sickly-looking, to the disfigurement of the plants, whose beauty is much enhanced by the deep green of their foliage when in a vigorous state. The best remedy for these is to *prevent* them ; and they will not make their appearance nor establish themselves if a moist atmosphere is maintained, and the plants are kept well syringed : to remove them, syringing with water mixed with *sulphur vivum*, and dusting the under side of the leaves with this when they are damp, should be resorted to.

ROUTINE OF COTTAGE GARDENING,

BY JAMES GRIGOR.

The first grand requisite is for every man to have a liquid manure tank fixed at a convenient distance from his dwelling. It is by no means necessary to go to the expense of brickwork and cement, an excellent substitute being found in pipes, hogsheads, beer-barrels, tubs, &c., according to the number of a man's family. Those tanks should be sunk into the soil, the hole in which they are set being well lined with soft clay, afterwards pressed tightly down about the sides. It is not necessary that a man should have a piggery or a cow-house in order to fill such tanks, for it has been found that the liquid collected in bed-rooms, &c., is preferable to any other.

Well, thus provided, we shall suppose the labouring man to start with an allotment at Michaelmas. If he kept a cow, the first thing he would do would be to dig a portion of the land for rye, or rye and vetches together, for of all things this is the most useful crop as spring feed. The vetches would be succeeded by turnips sown during the latter part of May. If potatoes had just been removed from the land, the first thing to be done is to spread upon it well-rotted manure, and if the land is loose and dry, a coating of marl and clay is found to answer well in *hardening* it so as to cause it to bear up the straw. Wheat dislikes fresh manure, and if the land could be enriched sufficiently at the time of laying down the previous crop, it would be better not to give it any. If part of the land should be clover ley, it should in like manner be dug up for wheat, carefully freeing it from all noxious weeds. The best manure for this sort of crop is mould well saturated with liquid. The wheat should be either drilled with a hoe or dibbled at the rate of six inches every way from each seed. A peck of seed will plant an acre ; and it will be found to tiller so that it will completely cover the soil and produce large and heavy ears.

During the month of OCTOBER, early York cabbages should be planted, to be succeeded by kidney beans sown in June ; and if the lines of cabbages are not very close to each other, the beans may be inserted during April and May whilst yet the cabbages are on the ground. In the latter case, liquid manure should be applied to the beans during moist weather ; and in a fortnight afterwards they will assume a healthy green colour. Another plan is to plant early Yorks so that each plant may occupy about a square yard, thus leaving a sufficient space for intruding as many rows of Scotch cabbages during May as there are, at present, rows of the former. By the time the Yorks come to maturity and are removed, the others have plenty of space left for their future growth.

The cottager's work for NOVEMBER consists chiefly in pulling up and storing carrots, mangold-wurtzel, collecting and turning over manure heaps, planting cabbages and wheat, (if not done in the previous month,) spreading liquid manure over lucerne and digging between the drills, planting a few turnips for seed, turning up soil for the winter to operate upon, &c., sowing peas, and if a warm sheltered spot can be had, a few radishes.

DECEMBER is reckoned the dead month of the year. A great deal may be done, however, by cottagers during their spare hours in collecting leaves, mould, &c., along the sides of hedges. It is impossible for a cottager to have too much manure when spring comes, and he should ever remember that the collecting of it about his neighbourhood produces a neat and tidy appearance. Roads and fences should be now repaired; and if any part of the land should require trenching or draining, now is the time. Gooseberry bushes should be all pruned during this month. If any stubble is left, let it be dug up for potatoes planted about six inches deep.

Let JANUARY be commenced by trenching up stubble ground on which plenty of liquid manure has been thrown, for carrots. This crop dislikes fresh solid manure, but the liquid, if put on now, it likes. The ground should be left rough, so that the atmosphere may operate effectually upon it. When the time comes for sowing, which is the end of March, it should be prepared afresh. During this month you will have an opportunity of meeting with a few well-formed savoys: take them and plant them by themselves for seed, for a good breed requires no greater attention than a bundle of loose leaves. In like manner, a few carrots and Swedes should be selected for seed. Potatoes should now be planted during open weather, also early frame peas, which should be steeped in a decoction of bitter aloes to prevent the mice eating them. If in a warm situation, a line of radishes may be put in between the rows of peas, and removed before the latter interferes with them.

FEBRUARY.—In reference to many crops Nature, during this month, makes the last call upon cottagers:—now, or not till next season. If hedging and ditching has to be done, it must be proceeded with immediately. If a fence has to be planted, not an hour should be lost, for the whitethorn is already on the start and will soon be green with swelling buds. On all patches of grass, lucerne and vetches, the liquid manure should now be applied, and especially on such spots as want *mending*. Wheat, too, if found backward, or thin in parts, should have some of the liquid applied to it. If your early cabbages are to be in the market ten days earlier than those of your neighbour, steal a march upon him by applying the contents of the tank, poured into circular basins formed around the root of each plant. In fact, the work of no month in the year affects the day of reckoning so much as the present. It is now that the heavy sheaves are to be formed. The spade should be in continual exercise, digging two spits deep, for a carrot crop to be sown the end of next month, and for a present sowing of beans and planting of cabbages. Now level down the well-trenched ground for a main crop of onions, which may be sown during the last week of the month. At the same time sow parsnips in rows eighteen inches apart.

MARCH opens with carrying plenty of liquid manure to the ground intended for carrots previous to its being turned over afresh for the seed; and in like manner for mangold-wurtzel. Sow both from the 20th till the end of the month. Let a full crop of potatoes be now planted, and between each set insert a table bean which rises high and interferes not with the haulm of the former. If there is a warm vacant spot under a fence, insert a few kidney beans, but reserve the main sowings till April and May. A full crop of onions should now be sown in rich, deep, free soil which has been well manured and ridged up in December. They should be sown in rows a foot apart, covering the seeds about three quarters of an inch deep. They will succeed all the better if the soil is trampled with the feet, or pressed down with the back of a rake. Early turnips may also be sown now, but the soil should be fine and rich.

In APRIL potatoes have to be planted, carrots sown, and a crop of barley laid down on part of the turnip ground. Early cabbages should now be carefully earthed up, leaving a ridge on each side of the lines, so as to hold the liquid manure, which should be again applied during this month. Choose the evening or cloudy moist weather for this operation. If not formerly done, stubble land should now be turned over for turnips. Mangold-wurtzel will succeed well enough still: the seeds should be inserted in rows two feet apart, the plants rising in lines at about a foot apart.

MAY.—The rye which was recommended to be sown at Michaelmas should now be succeeded by turnips or potatoes. In either case solid manure and the contents of the tank should be applied liberally, and the soil dug twice over. All growing crops, including wheat, should have the soil loosened about them during this month, by frequent hoeings. Sow a full crop of French beans in lines four feet apart, planting cabbages between. It is also a good plan to sow turnips between the lines of carrots.

In JUNE see that all your potato crops are clean. If any should have failed, raise a neighbouring set carefully with the spade, and take all the shoots away except one, which leave where it was taken from. The others carefully divide and plant in your open spaces, covering up the plant so as to leave only a few inches above ground. They will soon strike root, and produce large tubers, if encouraged with diluted liquid from the tank. Between your lines of early ash-leaved, insert a full crop of savoys, and take care whilst removing the potatoes during next month that you do not turn up the roots of the former. Winter cabbages, such as the drumhead, may be planted in like manner. Any deficiency in the richness of the soil will have to be made up by applications of liquid from the tank.

In JULY a full crop of winter cabbages should be put in, watering them well, and in moist weather applying liquid to them after they have rooted. Remove the bloom from the potatoes during this month. If a cow is kept, let the cottager now sow white turnips at the commencement of the month, if not done during the last few weeks. Onions will be fit for removing towards the end of this month : in their place plant winter cabbages. Let the hoe be used continually amongst turnips, mangold-wurtzel, carrots, &c.

AUGUST is the great reaping month. After removing the potatoes during the first week, let a full crop of brocoli succeed them. Sow during this month a yard or so of early York cabbage seed, and transplant them in October and November. Let the liquid manure tanks be now emptied on the stubble intended for rye.

Populus tremula.

THE POPLARS.

AMONG the variety of timber trees which have been brought under cultivation, the poplars are pre-eminently distinguished for their rapidity of growth. They thus become largely employed in new plantations, for the purpose of producing what is called immediate effect, that is to say, of giving apparent age to the plantations, and securing early the conditions of shade and shelter, which trees of considerable size alone can supply. The more valuable kinds of timber take a much longer period to attain this size, and hence the value of rapid growing kinds to supply their place temporarily. In plantations intended for ornament or effect only, these temporary trees should be so placed, that they may be gradually removed as the better kinds of trees gain size ; and so, also, that their removal may not mar the scenic effect of the masses. Where temporary trees of this kind are introduced into plantations intended for profit, their removal will of course be made dependent on the plan or arrangement upon which they were introduced ; and this plan should be clear and well defined at the time of making the plantation, so that whilst the temporary trees are suffered to remain long enough to realize the greatest possible return, this will not involve their remaining so long as to injure the more valuable and permanent crop of timber. Very much of injury and loss is, and ever has been, sustained from the neglect of this principle, which is based upon common sense, and should be self-evident. To so great an extent has this been the case, that the injury has come to be often laid to the charge of these temporary trees, which is manifestly unfair. The various kinds of poplar have come in for their share of calumny, and in many quarters a vast deal of prejudice exists against them: they have, however, their use, and this is what it is our purpose now briefly to set forth.

The principal kinds of poplar cultivated in this country are the following, which we shall briefly notice separately; the Abele, the Aspen, the common black Poplar, the black Italian Poplar, the Lombardy Poplar, the Tacamahac, or balsam Poplar, and the Ontario Poplar. Besides these there are several others, some of which are not uncommon.

The Abele, or white poplar (*Populus alba*), is a large growing tree, of which several varieties are in cultivation: it attains as much as ninety feet in height. It is by some said to be the same tree as that mentioned in the Bible under the name of shittim-wood. The roots of this kind throw up numerous suckers; the branches are white, and densely downy when young; the leaves are deeply lobed, and toothed on the margin; and the buds are without gum. The grey, or common white poplar, (*P. canescens*), closely resembles this in general properties. The wood of both kinds is very white and light, and is much used for flooring, but for this purpose requires to be well seasoned; it is also used for making packing-cases, as it does not crack when nails are driven into it; wherever lightness either of weight or colour is required, it is especially suitable. The trees do not bear lopping, owing to the softness of the wood, and its liability to shrink or crack; even when moderate sized branches are cut off, the wound should be covered with clay. It is one of the species well suited for filling up and thickening plantations, and for this purpose truncheons of ten or twelve feet long and four or five inches in diameter may be planted.

The Aspen, or trembling leaved poplar (*P. tremula*), of which an engraving stands at the head of this article, is a very ornamental object. It forms a large tree, but seldom more than from fifty to seventy feet high. Its roots, however, much impoverish the soil, and its leaves are detrimental to pastures. Its growth is rapid, and the branches extend horizontally, and at length become more or less pendulous. A variety called *pendula* has a very beautiful drooping habit. The leaves are roundish ovate, and toothed on the margin. This tree does not bear lopping well. The wood is white and tender, and is employed by turners, coopers, sculptors, joiners, and cabinet makers, and for various minor uses.

The common black poplar (*P. nigra*) is a very rapid growing tree, attaining to the height of thirty or forty feet in ten years, and arriving at its perfection in from forty to fifty years, beginning to decay when from sixty to eighty years old. The leaves are deltoid, pointed, and saw-edged. The tree bears lopping, and treated as a pollard produces an abundance of shoots; when cut down to the ground annually, it throws up numerous shoots like the willows. The wood is soft and yellow, and more liable to split than that of either the Abele, or the Aspen; it is, however, a good deal used for packing cases, and in Berlin the wood produced by knotty trunks, which is curiously mottled, is much used in making ladies' workboxes.

The black Italian, or necklace-bearing poplar (*P. monilifera*), is the most rapid growing of all the species. It will grow to a height of thirty or forty feet in seven years, and ultimately attains a height of from a hundred to a hundred and twenty feet. The leaves are deltoid, with a sharp point, almost cordate at the base in some cases. The wood of this tree is equal in quality, if not superior to that of the other poplars, and from its exceedingly rapid growth, a very large quantity is produced. Its large size renders it more fitted for building purposes. When employed temporarily to fill up plantations, or for immediate effect, proper attention should be given to thinning the trees, and to removing them before they injure others; otherwise they very soon overpower them. The stem is straight, and by judicious early pruning may be kept clear of branches to any height.

The Lombardy, or fastigiate poplar (*P. fastigiata*), is of a totally distinct habit from the rest of its family, and indeed almost every other tree; both stem and branches assume and retain a perfectly erect position, and reach a great height with a very inconsiderable diameter; this habit is termed fastigiate. The growth of this tree, in favourable soil, is very rapid; an instance is recorded where one hundred and twenty-five feet was attained in fifty years. The ultimate height varies according to circumstances from a hundred to a hundred and fifty. The trunk is twisted, and very deeply furrowed, and the wood, which is small in quantity in proportion to the height of the tree, is of little worth or duration. The leaves are deltoid, and much acuminated, crenulated along the whole margin. From its peculiar habit it is a very useful tree in landscape composition.

The Tacamahac, or balsam-bearing poplar (*P. balsamifera*), and the Ontario poplar (*P. candicans*), have a close general resemblance to each other. They are of very sturdy and somewhat upright habit, and attain, the former from forty to fifty, and the latter from fifty to sixty feet in height, growing rapidly while young. They both delight in rich soil, near water, and under these circumstances grow with great vigour. In both, the buds of the shoots are covered with a profusion of a very fragrant gummy matter. The balsam poplar has ovate-acuminate, or oval-lanceolate leaves; the Ontario has them heart-shaped and sharply pointed; in both cases they are saw-edged. The balsam poplar is one of the first trees to break forth into leaf in the spring, and in moist evenings, these and the gummy buds are so fragrant as to perfume the surrounding air; those of the other kind are a fortnight later. They are chiefly planted as ornamental objects.

We must not omit to mention one peculiar situation in which some of the poplars grow with tolerable freedom, while few other trees will survive. We refer to the smoky atmosphere of large towns, and especially in populated places. In such situations trees are doubtless of much importance in a sanitary point of view; their roots absorb from the soil, and derive nourishment from, those very matters which pollute the air, and after having served the economy of the plant, a portion is again returned to the atmosphere in the form of pure vital air. For this reason, trees should be introduced wherever practicable in densely populated districts; and although alone they may not be powerful enough to effect a complete sanitary reformation, yet, as aids in the great social work, they ought not to be overlooked. The black Italian, the common black, and the Lombardy, are perhaps the best to select with this object in view. All the species are moreover valuable as screens to hide unsightly buildings, or other objects that cannot be removed.

SELECT HYACINTHS.

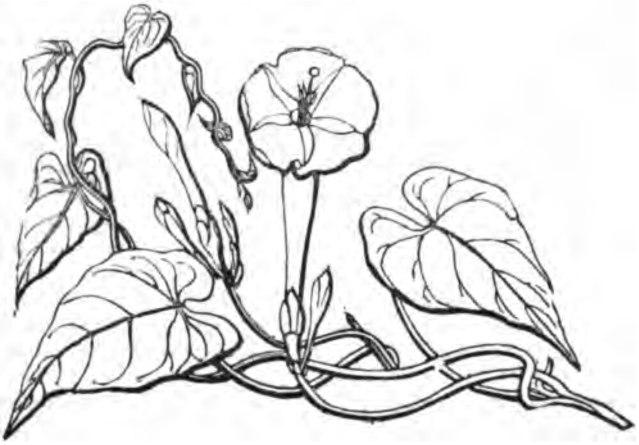
The following varieties were the very best of a large collection very finely bloomed in pots. They were noted down as the most distinct and beautiful of the several colours under which they are described. In general, perhaps, the single varieties were preferable to the double ones:—

Alfred the Great; double, deep purple.
Belle Jaune; single, yellowish.
Bouquet Royale; double, pink.
Charlotte Marianne; single, deep red.
Comte de St. Priest; double, pale blue.
Comtesse de la Coste; double, pale pink.
Don Gratuit; double, white.
Envoyé; double, pale blue.
Globe Terrestre; double, pale blue.
Grande Monarque de France; double, white, green tips.
Marie Louise; double, deep red.
Mars; single, deep red.
Nimrod; single, pale blue.
Perruque Royale; single, pink, or pale red.
Prince of Waterloo; double, white.
Pyrene; double, white, green tips.
Quentin Durward; single, deep purple.
Robinson; single, pale blue.
Staats-General; single, white.

From another series of memorandums taken from an extensive collection planted in beds out of doors, we make the following selection of those varieties found to be best suited for that purpose.

A la mode; double, blue, striped; early.
Alexius; single, pale creamy yellow; early.
Alvarino; single, straw colour; early.
Amicus; single, dark blue, tall; early.
Anna Maria; double, creamy white, violet eye; early.
Aurora; single, creamy buff; early.
Belle Agathée; double, greyish blue; early.
Bouquet Royale; dble, bluish, rose eye; early.
Comtesse de la Coste; double, pink, violet eye; early.
Dathames; double, dark purple; late.
Don Gratuit; double, creamy white; early.
Endraght; double, rose colour, creamy outside; early.
Favorite Blanche; single, white; early.
Globe Terrestre; pale blue, dark eye; medium season.
Grand Vainqueur; single, pure white; early.
Grand Vidette; dble, pale blue, dwf; early.
Henrietta Wilhelmina; sgle, deep pnk; early.
Herstelde Vreede; single, red, dark anthers; early.
Johanna Christina; sgle, pink, striped; early.
La Déese; double, creamy white, green tips; early.
L'Ami de Cœur; single red, violet eye; early.
,, ,, single, dark blue; early.
Lord Nelson; single, blue, striped; early.
Louis d'or; single, creamy yellow; early.
Madame d'Pompadour; single, salmony buff; early.
Marie Louise; double, blush, dwarf; medium season.
Mars; single, deep rose, dwarf; medium sesn.
Martinet; dark blue, green tips, tall; medium season.
Mignon Dryfhout; double, pale blue, tinged lilac; early.
Nannette; double, pure white; early.
Orondates; single, pale blue; early.
Panorama; blush, tipped with rose; medium season.
Passe-Tout; double, pale blue; early.
Prince de Galitzen; single, white; early.
Pyrene; dble whte, grn tips; medium season.
Sphæra Mundi; French white, blue eye; medium season.
Temple van Apollo; single, blush; early.
Triumph Blandina; single, pale blush; early.
Violet Foncé; double, violet blue; early.
Vulcan; single, purple; early.
Waterloo; double, red; early.

The above were those which succeeded best under the circumstances in the case alluded to. Some slight allowance should probably be made for the relative strength and vigour of the bulbs, which would in some degree influence their success; but as there were in most cases as many as four bulbs of each kind planted, and in many cases more than this number, the result may be regarded as a pretty good index of what may be expected from the same varieties in other instances. It may be well to remark, that when Hyacinths are planted out-doors, it is better to plant a large number of one kind than to intermix them. The remarks, early, medium season, and late, are intended simply to indicate the relative conditions of their blooming period; those marked early being first in bloom, and being also in perfection at the same time; and the same with the later varieties.



EXOGONIUM PURGA.

(*Bentham.*)

THE PURGA, OR TRUE JALAP.

The drug sold under the name of jalap is the tuberous roots of a convolvulaceous plant, the true jalap being that of *Exogonium* (or Ipomœa) *Purga*, but the roots of other species are at times substituted for those of the true kind. Jalap was at one time supposed to be the produce of *Ipomæa macrorhiza* (the *Convolvulus Jalapa* of Linnæus), which produces large roots weighing from forty to fifty pounds each; but the root of this species has been ascertained to consist chiefly of saccharine and farinaceous matter, and to possess no purgative properties. A kind of jalap called Purga Macho, Jalapa Macho, or Male Jalap, by the Mexicans, is produced by a plant called *Ipomæa orizabensis;* this is extremely similar in quality to the true jalap. Although jalap has been used in European medicine for nearly two centuries and a half, yet it is only within a few years that the plant which furnishes it has been accurately ascertained.

Exogonium Purga is a very beautiful climbing plant. It has roundish tubers, which sometimes become as large as a moderate sized turnip, and produce numerous stems, which are glabrous, turning from right to left, and extending ten or twelve feet. The leaves are alternate, acutely heart-shaped, or somewhat arrow-shaped, with a rounded, deeply lobed base, smooth, and of very moderate size. The flower stalks grow from the axils, and usually bear each two or three flowers (very rarely one); they are between funnel and salver shaped, shiny, and of a light purplish red, or rosy lilac colour; the tube is slender and club shaped, about two inches long, slightly tapering, and terminating in a nearly flat expanded limb of two and a half inches across. The flowers are very abundantly produced at the latter end of the summer. The plant grows on the mountains of Mexico. Schiede found it at a great elevation, on the eastern slope of the Mexican Andes, near Chiconquinaco, and near San Salvador, or the eastern slope of Cofre de Perote. Hartweg also met with it on the mountains of Orizaba. The true jalap plant seems to have been first sent from Mexico by Dr. Houston; at least seeds sent by him produced plants with smooth leaves, the *Convolvulus Jalapa* having downy leaves. Dr. Coxe, of Philadelphia, sent living roots to Dr. A. T. Thompson, in 1831. About the same time, Ledanois sent the root to Paris, and Schiede, travelling in Mexico, sent it to Germany. It was cultivated in the Botanic Garden of Edinburgh, in 1838, from roots sent by Dr. Coxe. It is also cultivated in the collection of the Horticultural Society, and that of the Society of Apothecaries at Chelsea.

The plant has borne many names. It has been called *Ipomœa Jalapa* (Nuttal), *I. Purga* (Wenderoth), *I. Schiediana* (Zuccarini), *I. officinalis* (Pelletan), *Convolvulus Jalapa* (Schiede, not that of Linnæus), *Exogonium Purga* (Bentham).

Treated as an ornamental plant, its cultivation is very easy. The roots should be planted in spring, and forwarded in a greenhouse, or cold frame, and then planted out in May; or they may be kept in pots and set out of doors; in either case they will grow freely. The branches will require some kind of support suitable to the position they are placed in. Those planted out must be taken up before they are injured by frost, and the roots stored among dryish soil, and kept free from frost and damp. Potted roots map be partially dried off and set aside under similar circumstances. In the following spring they should be again excited. Cuttings taken at any time will root freely, but if they are taken off early in the season, they will form good strong flowering plants for the same year; they may be taken off almost in the same way as Dahlia cuttings are managed. The soil should consist of any light, rich loam. On the continent, according to Royle, it is cultivated in the open air. Frost will, however, destroy it; a tuber in the Edinburgh Botanic Garden, the crown of which was injured by frost, was thus killed; it was then grown successfully in a cold frame during winter and spring, and uncovered in summer and autumn.

THE NATIONAL TASTE FOR GARDENING.

There is nothing conduces more to the interest of gardening in this country than taste exhibited in public establishments. Nothing has done so much damage as the absence of taste in the parks. Now, while we are expending millions on public works in Ireland, and literally fooling away money in many other projects, where would be the impropriety of laying out a few thousands to render the national gardens worthy of the high standing we hold among nations? We encourage the arts and sciences in general rather extravagantly, if not judiciously; why not show the world that gardening in this country is one of the sciences in which we excel? Why allow the ornamental portion of St. James's Park to look like a botch, without order or system, and remain as it is, the mere receptacle for cheap lots of common shrubs, picked up at bankrupt sales? Is there any thing unreasonable in a desire to see as good a garden for the public to walk in as the wealthy classes enjoy at home? Is the innocent enjoyment of a luxury by the working classes of no consequence? Surely the national pride is worth encouraging and gratifying when it can be done by the employment of a little labour in the royal grounds about the metropolis. If the lower classes have been taught to grumble at state extravagance in those things which they cannot enjoy, it is because there does not seem to be an attempt to provide any thing in which they can participate. We remember there was a great hubbub about spending seventy thousand pounds on Her Majesty's stables, because the grumblers neither saw the building, nor participated in the use of it; but there has been no grumbling about the million expended on the Houses of Parliament, because every poor man feels himself a part proprietor. The humble classes exult in the possession of a noble structure; the national pride is roused a little, and the most needy tax-payer feels he has something for his money. There has now been an enormous quantity of spluttering about the gardens at Frogmore, because the only notions the London public can form about Royal Gardens, is that founded on the abortion in the Park. Let John Bull have something to enjoy out of the public expenditure, and he rejoices rather than flags in the payment of his share. When was a voice raised by the most turbulent class against the purchases made for the British Museum? The public runs a little wild sometimes when unfortunately excited; but there is never any outcry against improvements that benefit all, though there is naturally an objection to the sort of things from which the public derive nothing, or which appertain to the rich only. In laying out the new parks and improving the old ones, everybody would agree to extraordinary costs; but while the authorities form drives for the rich, let them not forget walks for the poor; and instead of raking up all the cheap lots at a sale of some bankrupt's stock to plant with, let us hope there will be some attempt to do properly all that is done. But we have always maintained that part of the enormous income of the state should be expended in forming gardens as well as parks for the public. Whatever affords innocent enjoyment, does a national good. The thousands who resort to public-houses when they have done business should have every temptation to go where there is less expenditure and less mischief, and this should be placed among other things on the credit side against the expenditure. Not only so, but the very act of keeping up gardens entails the greater part of the expense *in labour*, the employment of which is itself a national benefit. There would doubtless be a great outcry in the House of Commons, perhaps, too, in the House of Lords, against this enormous expenditure, but why should there be ? If the people who have to pass the bills have gardens of their own, they represent millions who have not, and who go through life without such enjoyment, although the health and morals of the community would be improved by the money thus laid out. And let us remind those who dispense the taxes in all sorts of expenses, that as a matter of information they should look to the enormous amount paid by the poor upon all exciseable articles, and in import duties on things from abroad ; and then the injustice of refusing sufficient to make gardens for the public, will strike them forcibly. There is, in fact, no reason why the royal gardens and parks open to the public, should be worse kept than Frogmore or Chatsworth ; and the cost would not be enormous, for, the outlay once made, the annual expense could be calculated to a fraction. There may be a less choice of subjects and more difficulty in keeping up a garden at St. James's Park than at Hampton Court, or even Battersea and Hackney ; but, above all things, the garden of St. James's, with the advantage of the ornamental water, ought to be as rich in all things that will grow as it could be made, seeing that it is under the very eyes of royalty, close to the regal palace, and every way demanding and deserving attention. The paltry fountain should be replaced with a decent one, or, at all events, removed from so conspicuous a site. The plantations require to be cleared of a good deal of common rubbish, huddled together without arrangement, and planted without taste.

NOTES ON FLORIST'S FLOWERS.

BY GEORGE GLENNY.

The most remarkable of the seedlings produced at recent shows have been rendered so by the distinctions awarded to them ; for instance, Mr. Miller of Ramsgate has exhibited several new Geraniums ; one called *Distinctus*, which was the best of them, has been rejected as unworthy of a prize ; while *Grandis*, which was in every point inferior, and not worth cultivating by a collector of taste, was honoured with a certificate. The others, *Pompona*, *Queen of Kent*, *Jenny Lind*, *Brilliant*, and *Marginata*, may be called pretty, and, if not in advance, not far behind some of the favourites already in cultivation. Mr. Beck exhibited several, and among them four which had prizes. *Purple Aurora* did not deserve one by any means, it was inconsiderate, to say the least, and lessened the value of the prizes of those which did deserve them. *Favonius* has a good petal, large flower and bright colour. *Æcheon* is showy, though the back petals are frilled a good deal ; and *Anne* is a neat pretty flower. It is impossible, however, to overlook the fact that there is a great sameness among a number of the so called novelties. We have seen a fancy geranium, fit for bedding out, called *Jenny Lind*, honoured with a prize, while *Queen Adelaide*, a fancy flower of considerable merit and much higher qualities, was passed over. Among the Pansies there was a flower, called *Potentate*, neither self nor ground, but a struggle between both, the eye being a confused mixture of blue, white, and black, and the black breaking into the colour : it had a prize, but never can deserve it, be it grown how it may. *Jenny Lind* was pretty, but the texture bad, and ought not to have had a prize ; but the judges thought otherwise, and with all its faults it will be grown. In Pinks there are two or three advances. Wilmer of Sunbury has shown three or four that will be grown, but one of them is worthy of a place among the best. *Laura* has pleased everybody else as well as us, and received a certificate at the metropolitan show, which is a warranty in general. *Harvey* is pretty, and will be grown. *Black Prince* and *Arthur* are faulty ; and indeed *Laura* is the only one that is novel as well as good. Two pinks exhibited by Turner and Norman are highly promising, the petals being very good indeed—Turner's *Double X*, and Norman's *X.Y.Z.* ; both are acquisitions, and must be had, though *X.Y.Z.* is not so full as we should like to see it, and probably shall see it. Both these flowers advance the right way ; the petals are thick, broad and rose-edged. Smith has shown a Rosy Verbena, *Lady Webster*, very broad in the lobes, but not free from the notch ; one of somebody else's, without a single good point, had a prize at the Surrey Gardens. Upon the whole we never saw worse adjudications than took place at the last show of the South London Florists ; and we can say this the more freely without offending the exhibitors, because prizes were given to right men if not right flowers.

At Rosherville Gardens, which are the best adapted for a show of any that we have seen, the Geranium of Mr. Miller's called *Distinctus* was exhibited in good order, and fully maintained the opinion we gave of it at the Surrey show. A flower called *Rosa Mundi* is also very pretty, and deserves a place; these two geraniums are better entitled to honours than some that have had them. Among the PINKS exhibited, the best were *Bragg's George Glenny, Henbrey's Lady Hare.* The best of the FUCHSIAS shown were *Napoleon, Duchess of Sutherland, Delicata, Nymph, Empress, Countess of Cornwallis.* Most people were admiring *Colossus* and *Cassandra,* but the fault of the former is, that it is coarse and large; the corolla, although dark when it first comes out, and forming something like a contrast, though slight, soon loses the distinction, and is an unmitigated ugly subject; *Cassandra* is ragged compared with several in the same style. Mr. Veitch's NEW TROPÆOLUM is a decided novelty, and must be grown by all who pretend to cultivate any of the family. It is a large flower, not a close nor a round one like the ordinary nasturtium, nor is it compact like *Lobbianum,* but it is a brilliant scarlet, rather reminding one of a windmill with the outer half widened,—plenty to show off a gay and curious bloom when the plant is in perfection, and affording a singular illustration of the extraordinary differences in the form of the various flowers. There can hardly be a greater contrast than might be found in a collection of these subjects:—*tricolorum,* or any of its larger varieties, red and black; *brachyceras,* bright yellow; *azurreum,* blue; *Lobbianum,* dark orange; the new one, scarlet; *atrosanguineum,* dark; *tuberosum,* striped orange. We have still to urge upon the gardeners the necessity of abandoning the shield-like trellises upon which they grow these and other climbers; the style is nothing like nature, and we are surprised that they allow us, who can only boast of being an amateur, to dictate to them upon subjects that their own sense ought to render unnecessary. We have been years trying to cure them of this, and of propping up every sprig of a geranium; and they give way so reluctantly that we succeed in showing the public the absurdity of a practice before the headstrong growers will see it. The public now ridicule the hundred props which the geranium growers are obliged to use to keep those miserable monster plants from hanging over the pot; and we have convinced ladies and gentlemen of the folly of allowing themselves to be charmed by any thing, however gay, if it is unnaturally grown, and incapable of supporting itself without sticks. As usual, when we, by pointing out the folly of encouraging such things, have disgusted the public with them, other writers pretend to have made the discovery as a new thing, and even the leader at a show, where this has been encouraged for years, has just found out that it is a wrong practice, and proposes that it should be abandoned.

CEPHALOTUS FOLLICULARIS.

THE NEW HOLLAND PITCHER PLANT.

SCARCELY any subjects among the many vegetable productions which may fitly be classified as natural curiosities, attract more notice than the pitcher plants,—plants which are furnished with very remarkable and unique urn-like appendages, which botanists distinguish as *ascidia,* but which, in more familiar language, are called pitchers. Several genera of plants produce these appendages; but the title of Pitcher-plants is more exclusively conferred on the species of Nepenthes, which are stove plants of a straggling habit, furnished with long narrow leaves, from the end of the more perfect of which the pitchers, or ascidia, are dependant: some of these produce stems from ten to twenty feet long, and bear very numerous pitchers.

The *Cephalotus follicularis,* represented in the annexed engraving, differs materially from these, although it bears very perfect ascidia. It has however no other point of resemblance with those just referred to, being altogether of a distinct natural family, and having a totally different habit of growth. It is in fact regarded as an isolated species, having no direct affinity with any other known plant, and it is accordingly now stationed in a separate natural order, alone constituted by itself, and of which the proper station and affinities are an unsettled point. The evidence at present seems to lean towards their being ranged in the crowfoot alliance. This small and unsettled natural order is named Cephalotaceæ.

The plant is a small herbaceous perennial; when out of flower it forms a close little tuft of two or three inches in height, from which the flower-stem springs, and forms an erect spike of a foot or more in height. The root is somewhat fusiform, often dividing at the upper part, from which is produced a cluster of elliptic lance-shaped, entire, thickish, nerveless leaves; among which, but chiefly occupying the circumference, are placed the several beautiful and highly curious ascidia, attached to the plant by rather stout stalks fixed to the upper part of the pitcher, as it were at the back of each, where the lid also is fixed on to it. The form of the ascidia is ovate, or somewhat slipper shaped, and they are furnished with two lateral oblique wings, and one central one, the latter remarkably dilated at the margin, and all beautifully fringed with hairs; they are green tinged with purple, and are nearly of the same texture as the leaves, but somewhat more membranous; the mouth is contracted, horse-shoe-shaped, annulated, and crested with several deep sharp vertical annuli of a dark purple colour; the lid, which at first closes this mouth, but afterwards becomes nearly erect, is plano-convex, green and somewhat hairy without, clouded with purple within, and scalloped at the margin; the inside is clouded with dark purple, and contains a watery fluid, which entraps many insects, especially ants. The chief interest of the plant attaches to these remarkable appendages. The flowers are small, greenish white, without petals, and borne on a spicate raceme, which grows up a foot high and upwards. It is met with in various parts of New Holland, in boggy places, chiefly near the coast; it flowers there in December. The first living plants which were introduced appear to have been placed in the Royal Gardens at Kew in 1823. It blooms there in August.

The Cephalotus is a bog plant, and therefore delights in moisture. Indeed, the two chief requisites in its artificial cultivation, seem to be a regular supply of moisture at the root, and an equally moist and calm atmosphere. It is often kept in a stove, on account of the facility there afforded for supplying these conditions, but it does not require the heat of the stove. It should be potted in a wide shallow pot, half-filled with pieces of broken potsherd and charcoal, a fourth of roughish lumps of fibry peat soil, mixed with small lumps of charcoal, and the remainder close about the base of the plant, with common sphagnum and hypnum moss, cut short, that is, into pieces of about an inch in length; these materials must be carefully placed in the pots, the roots of the plants spread out among the peaty soil, and the cut moss very carefully and compactly as well as neatly laid about the base of the plants under the leaves and pitchers. To the surface a little fresh cut moss should from time to time be added, both to keep a neat appearance, and also to give the plant the benefit of a fresh supply of material about it, as the former decreases in bulk through decomposition. The pots should be set into garden pans, which should be pretty well supplied with water, so that the soil and material in the pots may be constantly supplied by capillary attraction, but must not be suffered to stand in the pans and become stagnated; it should be often changed, and the pot may stand without a fresh supply for a day or so; then it may be given as before. The surface of the moss about the plant will hardly require to be directly supplied with water, as it will draw up enough from beneath; but in case it should be getting somewhat dry, it may be sprinkled over slightly so as to keep it moist. A bell-glass should usually be placed over the plant. If it be in a plant-stove, where there is a close humid atmosphere, then the glass may be removed during the night, and sometimes in the day, when the sun is not powerful and there is not a draught of cold or dry air rushing into the house. If kept in the greenhouse, the glass should be usually kept over the plants. They prefer a somewhat shaded to an exposed situation, that where they are partially overhung by contiguous plants being very suitable for them.

In the garden of Sir W. Molesworth, at Pencarrow in Cornwall, the Cephalotus has been grown under certain conditions out of doors, with merely the protection of a hand-glass.* Those conditions were as follows:—In a large piece of rockwork at Pencarrow, a bog or swamp of irregular shape, averaging nine feet in diameter, was formed; this is well sheltered and shaded from the sun. Above is a reservoir from which, by means of a pipe, a greater or less supply of water is obtained, just as may be deemed requisite. When this bog was formed, the ground being porous, a layer of wet clay was put at the bottom; on this, a mixture of turfy peat and a very little decayed leaf mould; and on the top a layer of sphagnum, with some of its decayed roots, and some of its natural soil that was under the roots. Four years ago, some Sarracenias (another kind of pitcher-plant) were planted in the bog under the hand-glass, and have grown well. Three years ago the Cephalotus planted in a similar manner grew very well. In April, 1846, it was rooted up by a mouse or snail, and appeared dead. The roots were all dead, but a little life was left in the stem. This was placed upon a rotten stump of a tree, that had some chasms in it, and living moss growing in it, and some perfectly rotten wood. Into one of the holes, or chasms, was placed a little fine sandy peat, a few knobs of rotten wood, and some very much decayed leaf-mould, also a little sphagnum, and in this the withered stem was planted. The stump was then sunk in the middle of the bog, to nearly the level of the rim of the hole where the plant was placed, so that the percolating water gently moved past, and pressed probably in some degree through the lower fittings of the hole. A small bell-glass was put over the little plant, but the edge of the hole being uneven, the glass was not air-tight. Over this was put a square iron hand-glass; it being in two parts, the air got in a little between the top and bottom. In the middle of hot sunny days it is partially shaded. In summer the bell-glass is taken off altogether, except when the night air is cold; and in fine weather, the top of the hand-glass is turned, so that through the angles the air has full access to the plant. With this treatment the plant attained a vigorous growing state, and produced many of its beautiful pitchers.

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* Journal of the Horticultural Society, vol. ii. p. 72.

POLEMONIUM CŒRULEUM.

(Linnæus.)

GREEK VALERIAN, OR JACOB'S LADDER.

The Greek Valerian is a common hardy perennial plant, of a very ornamental character, and perfectly easy of cultivation.

It belongs to the natural group of Polemoniaceæ, to which also belongs the Phlox, the Gilia, and some other of our gay border flowers. It is a nauseously bitter plant; in Siberia poultices prepared from its leaves are thought serviceable in syphilitic eruptions; and the Russians fancy that a decoction of it is useful in hydrophobia.

The plant is perfectly hardy. It produces a tuft of pinnate glabrous leaves, which are composed of several pairs of oblong-lanceolate leaflets placed alternately; the stalks rise about a foot and a half or two feet high, and are channelled, and furnished with smaller leaves of the same form as the lower ones; the stems are terminated by bunches of blossoms, which are large, wheel-shaped—that is, with a short tube and spreading border—and are produced in the latter end of May, and through June and July. It is met with in various parts of Europe, and is found, though very rarely, in some parts of Britain.

There are some varieties:—The most common kind produces flowers of a pretty blue colour; another bears white flowers; another has variegated blossoms; and a fourth variety, also bearing blue flowers, has variegated foliage.

The seeds are always to be obtained with facility in the seed shops, and by their means the plant is best propagated, as young seedling plants are more vigorous than plants raised by the ordinary process of division. To obtain a succession of flowers, seeds should be sown at two periods; first, in August, along with other perennials for early blooming the following year, and then again in February, to flower late in the year. Those sown in August should be sown on a bed of common garden soil, covered about a quarter of an inch with fine soil, and kept well watered if the weather is dry; they will soon germinate, and the young plants, when they have formed a pair or two of leaves, should be transplanted into a prepared bed of fine soil—good, but not very rich; for if they grow too luxuriantly, they are more liable to suffer from frost; they must be shaded and kept well watered until they begin to grow afresh. At this planting they should be set four or six inches apart. Here they are to remain till spring; but as very severe frosts are apt to injure young seedlings even of hardy plants, it is desirable that in severe weather a covering of loose open litter, such as peas haulm, may be laid over them as a slight protection. As early in March as the weather will permit, these plants are to be transferred to the places where they are to bloom; and if the weather is dry and keen about the time they are transplanted, they must be watered. These will bloom in May and June.

The spring sowing must be made in a box and set in a cold frame, or, perhaps, to induce germination, where there is a very slight heat, and afterwards placed in a cold frame; when they have formed two pairs of leaves, let them be transplanted as with the other, in a sheltered border of good soil, where they will grow rapidly. In April or May, when large enough, they may be transplanted carefully to the borders, and will bloom at the latter end of the summer.

Division of the old plants may also be resorted to early in autumn, in which case they become well established for blooming the following season. Seedling plants are usually stronger than those obtained by division, but where only a few plants are required, the latter mode, which is the least troublesome, will be sufficient to keep up the supply. The white flowered and variegated leaved varieties ought, however, to be increased by division, as they cannot be increased with certainty from seeds, the seeds of the white variety often producing plants with blue flowers. The month of September is proper for transplanting and dividing them.

The seeds usually ripen about August, and for the first sowing may be used immediately; a supply for spring sowing, when resorted to, should be gathered, and dried, and stored by in papers, as is usual with other seeds.

There are some other species of Polemonium grown in our gardens, of which *P. reptans*, a dwarf species with pale blue flowers; *P. sibiricum*, a species resembling *P. cæruleum*, but having elegant white flowers; and *P. humile*, a dwarf kind with large blue flowers, are the most commonly seen, and perhaps the best for general purposes.

BOTANICAL TERMS,

CHIEFLY APPLIED TO THE FRUIT OR SEED.

Achenium; a simple superior, dry, bony, one or two-seeded fruit: the borage is an example.

Acinus; a term applied by some to such succulent semi-transparent berries as the grape, currant, &c.; also to distinguish a bunch of such fruits, especially grapes.

Acrosarcum; a term also applied to a berry; see *bacca.*

Accumbent; applied to the cotyledons when folded with their edges towards their radicle; lying on something else.

Akena; a term synonymous with *cypsela.*

Akenium; synonyme of *cypsela;* also of *achenium.*

Albumen; the solid farinaceous substance interposed between the embryo and testa of some, but not all seeds; it is sometimes fleshy, and sometimes bony, or even stony.

Amalthea; synonyme of *etærio.*

Amnios; a clear transparent fluid matter in the seed, the product of fecundation, which nourishes the embryo during its growth.

Amphicarpus; round-fruited.

Amphisarca; a compound superior fruit, indehiscent and many-celled, with a dry external pericarp, and internally pulpy: the fruit of adansonia is of this kind.

Amphispermium; a name applied by some authors to distinguish such seeds as have the pericarp of the same figure as the enclosed seed.

Amphitropal; when the embryo of the ovule or seed is curved down so as to present both the apex and radicle to the hilum: the embryo of the seed of mignonette is of this kind.

Anatropal; when the embryo of the ovule or seed is reversed in the ovary by the more rapid growth of one side than the other; such is the case in the seed of the apple, cucumber, &c,

Annulus; same as *gyrus.*

Antitropal; when the embryo is inverted with respect to the seed, as in the seed of the nettle.

Antrum; synonyme for *pomum.*

Apocarpous; a term applied when the carpels of a compound pistil are either entirely or partially distinct, as in caltha.

Apophysis; an elongation downwards of the theca of mosses.

Arcesthide; synonyme of *strobilus.*

Aril; a spongy enlargement of the placenta, forming an additional envelope to some seeds; the nutmeg is enveloped in this way, the aril being the mace of the shops.

Ascelli; same as *asci;* tubes in which the sporidia of some fungi are placed.

Asci; small tubes which contain the sporules of some cellular or cryptogamic plants.

Ascigerous; having or bearing asci.

Asinima; synonyme of *syncarpium.*

Bacca; a berry, a compound inferior fruit, with a fleshy pericarp, soft epicarp, and having the cells obliterated or unilocular, that is, without internal divisions; as in the currant.

Baccaularius; synonyme of *carcerulus.*

Balausta; a compound inferior fruit, with a fleshy pericarp, hard epicarp, and not having the seeds parietal: the pomegranate is an example.

Basal (basilaris); fixed at the base of anything; usually applied to the embryo when situated at the lower end of the seed.

Berry; same as *bacca.*

Blasteme; a term applied by some authors to a part of the embryo including radicle, plumule, and caulicule.

Blastus; a name applied to the *plumule* of grasses by some writers.

Cachrys; synonyme of *strobilus.*

Cænobio; synonyme of *carcerulus.*

Calybio; synonyme of *glans.*

Calyptra; the thin membranous extinguisher-like hood or covering of the thecæ in mosses.

Campulitropous; same as *amphitropal.*

Capsule (capsula); a compound superior dehiscent valvular seed vessel, with a dry external pericarp, and differing slightly from ceratium: the primrose affords an example.

Capillitium; a peculiar body which encloses the spores of some fungi.

Carcerulus; a compound superior indehiscent, many-celled fruit, not winged, and dry, both externally and internally: the mallow affords an example.

Carpadelium; synonyme of *cremocarpium.*

Carpels; the small portions or valves of which the fruit or seed vessel is formed.

Caryopsis; a compound indehiscent superior one-celled fruit, with the pericarp dry externally; as in wheat.

Cataclesium; synonyme of *diclesium.*

Caulicula; same as *collet.*

Cell; the hollow part of a seed-vessel in which the seeds are lodged: sometimes seed-vessels are one-celled, sometimes many-celled.

Ceratium; a compound superior dehiscent fruit, with a dry pericarp opening by valves, which separate from the replum or framework of the fruit; as in glaucium.

Cerio; synonyme of *caryopsis.*

Circumscissile; a mode of dehiscence or separation of the valves of a seed-vessel, occurring by a transverse circular division of its parts, as in the anagallis.

Chaluza; a vascular disk or spot on the seed at the base of the nucleus, indicating where it was united with the seminal integuments.

Coleophyllum, Coleoptilum; a sheath which envelopes the young leaves in the embryo of monocotyledonous plants.

Coleorhiza; a little sheath which tips the radicle or germ of the root in monocotyledonous plants.

Collet; the point whence the plumule and radicle diverge after the germination of the embryo; the imaginary line of division between the radicle and the cotyledons.

Colum; a term applied to the *placenta.*

Columella; the axis from which the valves of a dehiscent fruit separate.

Compressed; applied to such seeds as are flattened lengthways.

Conceptacles; same as *sporangia.*

Cone (conus); same as *strobilus.*

Conidia; the powdery bodies which compose the *soridia* of lichens.

Coniocysta; a form of the apothecium in lichens; it is closed and shaped like a tubercle.

Conceptaculum; a compound superior dehiscent fruit, with a dry pericarp separating into two portions and opening by a longitudinal suture, as in echites and asclepias.

Corculum; a term applied to the *embryo* of the seed.

Cotyledons; the seminal leaves or lobes which afford nutriment to the young plant before the expansion of the true leaves. In germination they either lie buried as in the horse-chestnut, when they are called *hypogæan;* or they spring into the air, as in the cabbage, when they are called *epigæan.*

Cremocarpium; a compound inferior indehiscent fruit, with a dry pericarp, and having two or more cells: umbelliferous plants offer examples.

Cynarrhodum; an aggregate fruit with the ovaries distinct, and consisting of indehiscent pericarps, enclosed within the fleshy tube of the calyx, as in the rose: it is also spelled *synarrhodum.*

Cypsela; a compound inferior indehiscent fruit, with a dry pericarp, having but one cell, and destitute of a cupula: the fruit of all compositæ, as the daisy, the thistle, &c., is of this kind.

Cystidium; same as *utriculus.*

Cystula, cistella; a round closed body containing the sporules of some lichens.

Dehiscent; separating spontaneously, that is, by the natural sutures or divisions, into distinct pieces; applied to seed vessels.

Depressed; applied to such seeds as are flattened vertically or crossways.

Diclesium; applied to collective fruits, which are single-seeded, with an indehiscent pericarp, and enclosed within a dry indurated perianthium; as in the Marvel of Peru.

Dieresilis; synonyme of *carcerulus.*

Diplotegia; an inferior compound dehiscent or rupturing fruit, with a dry pericarp, as in campanula.

Dissepiments; the membranes forming the vertical partitions which divide the cells of the ovary into distinct compartments.

Drupe (*drupa*); a simple one or two-seeded indehiscent fruit, fleshy externally and bony within, as the peach, the plum, &c.

Elaterium; synonyme of *regma*.

Elaters; loose spiral fibres found among the sporules of some cellular plants.

Embryo; the fleshy body, forming the rudiment of the future plant, and occupying the interior part of the seed; it consists of three parts, the *radicle*, *cotyledon*, and *plumule*.

Endocarp (*endocarpium*); the inner coat or shell of a fruit, enclosing the seed; the stone of a peach is its endocarp.

Endopleura; the inner coat of seeds.

Endospermium; synonyme of *albumen*.

Endostome; an inner integument enclosing the ovule.

Epicarp (*epicarpium*); the external integument or skin of a fruit; the skin of a peach is its epicarp.

Episperma; same as *testa*.

Erythrostomum; synonyme of *etærio*.

Etærio; an aggregate fruit, with the ovaria elevated above the calyx, and the pericarps distinct; sometimes they are dry upon a dry receptacle, as in the ranunculus; sometimes dry upon a fleshy receptacle, as in the strawberry; sometimes fleshy upon a dry receptacle, as in the raspberry.

Exostome; an outer integument enclosing the ovule.

Flocci; woolly filaments found mixed with the sporules of many fungi.

Follicle (*folliculus*); a simple, many-seeded, superior, dehiscent, one-valved fruit: the pæony is an example, its seeds being borne in what are termed *follicles*.

Foramen; a perforation or passage through the twofold sac or integument of an ovule; it is always to be found facing the radicle.

Funiculus; the cord or thread by which the ovules are attached to the placenta; the umbilical cord.

Galbulus; a seed-vessel differing from the cone only in being round and having the heads of the carpels much enlarged, as in the juniper.

Gemmule; same as *plumule*.

Germen; an old name for the ovary, which latter term has superseded it.

Germination; the act or operation of the vital energies of the organs of the seed, by which the embryo is extricated from its envelopes and converted into a plant.

Glans; a compound inferior, indehiscent, one-celled fruit, with a dry pericarp surrounded by a cupulate involucre, as in the acorn: the seeds of the beech and the sweet chestnut are glans.

Globuli, *glomenuli*; same as *soredia*.

Gongyli; the granules contained in the shield of a lichen; also round hard bodies which separate from the parent and produce new individuals in the sea-weed tribe.

Gonophore; a peculiar form of the receptacle, or that part to which the carpels are fixed.

Gousse; synonyme of *legumen*.

Gynobase (*gynobasis*); a fleshy receptacle, bearing a single row of separate fruit.

Gynophore; a lengthened receptacle, bearing the petals, stamens, and pistils (and consequently the ovary), but not the calyx; as in the passion-flower.

Gyrus, *gyroma*; a thickened elastic ring, partially surrounding the cellular membrane forming the thecæ, or capsule of ferns.

Hemigyrus; synonyme of *folliculus*.

Hesperidium; a compound superior indehiscent fruit, with the pericarp fleshy, and the sarcocarp separable, as in the orange.

Hilofere; a term applied to the *endopleura* or internal integument of the seed.

Hilum; the part by which the seed is attached to the placenta; or, by some it is defined as the mark or scar left upon the surface of the seed by the natural fracture of the umbilical cord.

Incumbent; applied to the cotyledons when folded up in the seed with their back upon the radicle.

Indehiscent; applied to fruits in which the pericarp continues perfectly closed, and does not separate spontaneously.

Indusium; a thin membranaceous integument covering the thecæ or groups of capsules of some ferns.

Inferior; this term is applied to a fruit when the pericarp adheres to the calyx, or originates below it; the apple and the currant are inferior fruits.

Legumen; a simple, two-valved, many-seeded fruit, dehiscent by a suture along both its face and back, and bearing its seeds on each margin of the ventral suture, as the pea and the bean.

Loculicidal; a mode of dehiscence in which the dissepiments form the middle of each valve, as in the lilac.

Lomentum; a simple, many-seeded fruit, differing from the legumen in being contracted in the spaces between each seed, and then separating into distinct pieces: ornithopus is an example.

Lorica; same as *testa*.

Melonidium; synonyme of *pomum*.

Microbasis; synonyme of *carcerulus*.

Micropyle; in the ripe seed this term is applied to the *foramen*.

Mitriform; applied to the calyptra of mosses, when separated equally at the base, so as to hang regularly over the thecæ.

Nauca; a term applied to seeds in which the *hilum* or *umbilicus* is so large as to occupy a considerable part of the surface of the seed, as in the horse-chestnut.

Neck; same as *collet* and *caulicule*.

Nucleus; the central pulpy mass of the ovule, enclosed by integuments of the testa; it is also applied to the disk of the shield which contains the sporules, in lichens; and to an analogous part in some fungi.

Nucula; same as *glans*; applied also to some forms of the cases which contain the organs of reproduction, in some of the cellular plants (charas) allied to sea-weeds.

Nuculanium; a compound superior indehiscent fruit, with a fleshy pericarp, inseparable from the sarcocarp, as in the grape; this chiefly differs from the berry in being superior.

Nux; synonyme of *achenium*.

Omphalodium; the central part of the hilum, through which the nourishing vessels pass.

Operculum; the lid which closes the thecæ in mosses.

Orthotropous; when the axis of the ovule is rectilinear; that is, straight, and having the same direction as the body to which it belongs.

Ovules; the small semi-pellucid pulpy bodies borne by the placenta, which gradually change into the seed: an ovule is erect when it grows from the base of the ovary; ascending when from a little above the base; pendulous when it hangs from the summit; and suspended when depending from a little below the summit.

Pappus; the calyx of composite plants, which is very different in appearance from that of other plants, is called pappus; it is of various kinds, such as pilose, plumose, setose, paleaceous, &c.

Parietal; applied to the placenta when attached to the sides or paries of the ovary; arising from the inner lining of the ovary.

Pentachenium; synonyme of *cremocarpium*.

Pepo; a compound inferior, fleshy, indehiscent fruit, with a fleshy pericarp, hard epicarp, and the seeds attached to a pulpy parietal placenta, as in the melon and cucumber and the gourd family.

Peponida; synonyme of *pepo*.

Pericarp; a collective term, applied to the integuments which cover the seed: it consists of epicarp, sarcocarp, and endocarp.

Peridium, *peridiola*; the membrane by which the sporules of fungi and seaweeds are covered.

Peristome; the fringe which surrounds the mouth of the thecæ of mosses.

Perisperm; same as *testa*; also applied by some to the albumen of the seed.

Peridium; the covering of the reproductive organs of fungi.

Pilula; a term applied by Pliny to the form of fruit now called a *cone*.

Placenta; the part of the ovary from which ovules originate.

Plopocarpium; synonyme of *folliculus*.

Plumule; the point of the embryo whence originates the ascending axis, the rudiment of the stem.

Pod; same as *legumen*.

Podogynium; synonyme of *synophore*.

Podospermium; synonyme of *umbilical cord*.

Polakenium; synonyme of *cremocarpium*.

Polexostylus; synonyme of *carcerulus*.

Polychorion, *polysecus*; synonyme of *etærio*.

Polyphore; an elongated succulent receptacle, bearing many ovaries, as in the strawberry and raspberry.

Pome (*pomum*); a compound inferior indehiscent fruit, with a fleshy pericarp, soft epicarp, and having the seeds distinctly enclosed in dry cells, as in the apple and the cratægus: such fruits as these bear also the name of *apples*.

Primine; the outermost membrane or integument (or sac, as it is sometimes called) enveloping the nucleus of the ovule; it is variable in its degree of development.

Pteridium; same as *samara*: *pterodium* is also a synonymous term.

Putamen; same as *endocarp*.

Pyridium; same as *pomum*.

Pyxidium; a compound dehiscent, superior, one-celled, many-seeded fruit, opening by a transverse incision, and having a dry pericarpium: anagallis is an example.

Quartine; a term applied to one of the inner integuments of the ovule.

Quintine; a term applied to an internal integument of the ovule.

Radicle; that part of the embryo the elongation of which forms the root.

Raphe; the vascular umbilical cord, forming the line of communication between the hilum and chalaza of the seed.

Receptacle (*receptaculum*); the apex of the peduncle, the part upon which the carpels are attached.

Regma; a compound superior fruit, dehiscing with elasticity into two valves, as in euphorbia: the cells of this kind of fruit are called *cocci*.

Rostellum; a term applied to the *radicle* in the embryo.

Rupturing; an irregular mode of bursting in the pericarp, distinct from dehiscence, which is regular, and always takes place by the valves: in rupturing, the texture of the pericarp is broken.

Sacellus; synonyme of *diclesium*.

Samara; a compound, superior, winged, many-celled indehiscent fruit, in which the pericarp is dry, as in the ash and the elm.

Sarcobasis; same as *carcerulus.*

Sarcocarp (*sarcocarpium*); the intermediate fleshy or pulpy mass between the epicarp and endocarp.

Sarcodermis; same as *sarcocarp.*

Scapus, scapellus; terms applied to the *neck* or *collet.*

Scelerant[h]um; synonyme of *diclesium.*

Scutellum; a term applied to a form of fructification occurring in lichens, consisting of a shield with an elevated rim enclosing the sporules.

Secundine; an inner membrane enveloping the nucleus.

Septa; the dissepiments or partitions which divide the interior of a fruit into separate parts or cells.

Septicidal; a mode of dehiscence, which takes place through the dissepiment, that is, when the dissepiments divide into two plates, and form the sides of each valve, as in rhododendron.

Septifragal; a mode of dehiscence in which the dissepiments adhere to the axis, and separate from the valves, as in the convolvulus.

Seta; the stalk which supports the thecæ, or capsule, in mosses.

Silicula; a compound superior roundish fruit, with a dry pericarp, and dehiscing by valves; the position of the placenta distinguishes the silicula and the siliqua from the ceratium and capsule. It differs from the siliqua in being of a roundish form: the common shepherd's purse, and the garden honesty are examples.

Siliqua; a compound superior linear fruit, with a dry pericarp, and dehiscing by valves: in this and the last the placenta is opposite the lobes of the stigma: this kind of fruit is instanced in the stock and the cabbage.

Soredia; heaps of powdery bodies, scattered over the surface of the thallus or leafy frond of a lichen.

Sori; the small heaps, clusters or patches of spores or granules which are the reproductive particles of what are called dorsiferous ferns, which are those which bear these sori on the back of the fronds.

Sorosis; a collective aggregate convex fruit, forming a succulent spike or raceme, converted into a fleshy fruit by the cohesion of the ovaries and floral envelopes: the fruit of the pine-apple and mulberry are of this class.

Spermaphorum; a term applied to the *placenta.*

Spermidium; same as *achenium.*

Spermoderm; same as *testa.*

Sphalerocarpum; a collective one-seeded fruit, with a fleshy perianthium, and indehiscent pericarp, as in the fruit of the yew tree and sea buckthorn.

Spilus; a brownish spot occurring in the seeds of grasses, and indicating the position of the *hilum.*

Sporangia; granules which contain the sporules of ferns.

Sporangium; the external case in which the sporules of some fungi are contained.

Sporangiola; same as *sporangium.*

Spores; same as *sporules.*

Sporidiola; same as *sporules:* applied to fungi.

Sporidia; the filmy envelope or immediate covering of the sporules of fungi.

Sporocarpium; the capsule of jungermannias, a class of cellular plants allied to mosses.

Sporules; the minute granules or reproductive particles of cellular plants, analogous to the seeds of flowering plants.

Sterigmum; synonyme of *carcerulus.*

Strobilus; a collective aggregate convex fruit, differing from a sorosis in being an indurated amentum, instead of a succulent spike; the carpels of the strobilus are scale-like, and bear a naked seed; the fir cone is an example.

Stroma; in fungi, a fleshy body to which the flocci or woolly filaments are attached.

Strophiolæ; irregular lumps or protuberances about the umbilicus, arising from the enlargement of the testa.

Superior; this term is applied to a fruit when the pericarp does not adhere to the calyx, or originates above or within it: the plum is a superior fruit.

Sutural; a mode of dehiscence which takes place along the inner edge of a simple fruit, as in the pea.

Sutures; the edges by which the valves of the fruit unite; when the sutures correspond to the midrib of a leaf it is called the *dorsal suture,* and when corresponding with the margins, the *ventral suture.*

Syconus; a hollow aggregate collective fruit; a fleshy rachis, having the form of a flattened disk, or of a hollow receptacle, with distinct flowers, as in the fig.

Syncarpium; an aggregate fruit, in which the ovaria are elevated above the calyx, and the pericarps cohere into a solid mass, as in magnolia and the custard apple.

Syncarpous; a term applied when the carpels of a compound pistil are united completely into an undivided body, as in pyrus.

Synochorion; same as *carcerulus.*

Tail; the long feathery or hairy termination of certain fruits.

Testa; a collective term applied to the integuments of a seed, consisting of three parts, namely, an external and internal integument, with an intervening substance called the *sarcodermis.*

Thalamus; same as *receptacle.*

Theca; the urn, or capsule which contains the sporules of the mosses.

Thecaphore; an elongated receptacle which bears the ovary in some plants; same as *gynophore.*

Tigelle; a term applied to the neck or collet of the embryo.

Torus; same as *receptacle.*

Trophospermium; a term applied to the *placenta.*

Tryma; a compound superior dehiscent fruit with a coriaceous valveless sarcocarp, as the walnut.

Tympanum; a membrane enclosing the orifice of the thecæ in mosses.

Umbilicus; the hilum, the end by which the seed is attached to the placenta.

Umbilical cord; same as *funiculus.*

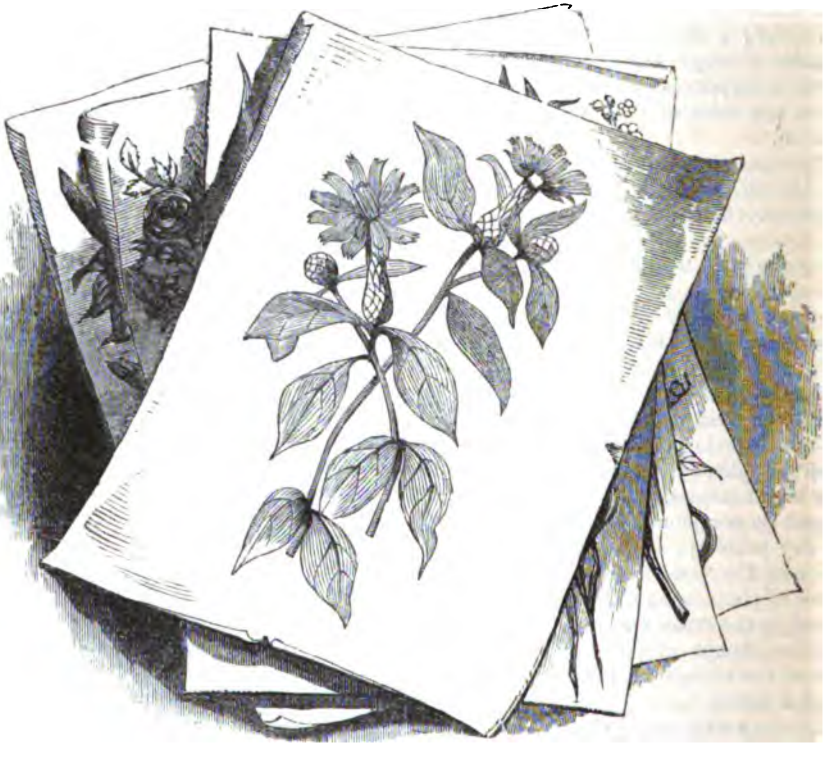
Utriculus; a simple one or two-seeded membranous fruit, often dehiscing by a transverse incision; as that of the amaranthus.

Valves; the pieces into which a dehiscent fruit or seed-vessel naturally separates.

Vitellus; a fleshy sac occasionally interposed between the albumen and the ovule, the latter of which it envelopes.

Vittæ; vessels (containing the secretions of the plants) which are found in the coat of the fruit of umbelliferous plants: their number and position serve to distinguish these plants.

Xylodium; synonyme of *achenium.*



BARNADESIA ROSEA.

(Lindley.)

ROSE-COLOURED BARNADESIA.

THIS plant belongs to that section of composite plants to which the name of Mutisiaceæ has been applied. It is one of the smaller groups of species into which this large order of plants is divided, and most of its members exhibit a singular and very elegant structure, and some, as in the case of Barnadesia, possess considerable beauty. The Mutisiaceæ form one of the two divisions into which the labiatifloral composites (that is, those in which the hermaphrodite or unisexual florets are divided into two lips); the other division, Nassauviaceæ, being distinguished from it by certain peculiarities in the structure of the stigma and style.

The *Barnadesia rosea* is not a very handsome plant in its manner of growth, nor is it very prolific of blossoms: it is not, therefore, adapted for general cultivation, but may be regarded as an example of a very beautiful flower when viewed individually, both its colour and its structure being exceedingly elegant; the latter point will indeed be evident from an inspection of the engraving. In a cultivated state it produces long weak slender stems, which, no doubt, in its wild state, are semi-trailing, some closely allied plants having a more or less climbing habit. The leaves are usually alternate, but sometimes opposite, or even three together; they are of an obovate-lance-shaped figure, ending in a sharp point, quite entire or even on the margin, and tapering at the base into a short petiole or footstalk; they are of a lively green colour. At that part of the stem where the leaves are situated, and also where a branch issues from the stem, one or two short straight sharp spines are often, indeed usually, produced. The flower-heads — or flowers, as they would be commonly termed— are large, about an inch and a half in diameter; they are produced singly at the end of a branch, two or three leaves being set close to their base. In botanical language this head of flowers is called a *capitulum*, and it consists of four obvious parts, besides the rudiments of the seeds which are enclosed, and therefore not apparent unless the flower-head is pulled asunder: these parts are the *involucre*, the *florets*, the *anthers*, and the *stigma;* the involucre consists of numerous appressed scales closely imbricated, that is, lying over one another like the tiles of a roof; the lowermost of these scales which invest the base of the flower-head are of an ovate acutely pointed figure, and a greenish colour; the upper ones are very much longer, almost linear in figure, and becoming rose-coloured, the same hue as the florets: the florets—each of which, it must be remembered, form a perfect flower—are two-lipped, the outer lip ligulate or strap-shaped, with four small teeth at the end, the inner filiform, curved and spreading; the colour is a rich deep rose: the anthers, as in all composite or syngenesious plants, are united, in this case, surrounding the style, which extends beyond them, and is terminated by an obliquely truncate stigma; the seeds, which are ranged on the receptacle at the base of the flower-head, and connected each with a floret, by means of a long slender tube, are seen, when separated from the other parts of the capitulum, to have a crown of rigid feathery hairs, which, as in the well-known example of the dandelion, (*Taraxacum vulgare,*) are designed for the dissemination of the seeds; this machinery, however, called the pappus, is variable in its appearance and structure, and in this case is very different from that of the dandelion.

Little is known of the history of this plant. It is a native of South America, but its precise locality is unknown. Sir W. J. Hooker has specimens both from Peru and Brazil, which he regards as being the same. It was introduced, about 1838, to the collection of the Duke of Northumberland at Syon, where it blossoms in the stove during the winter months. It should be potted in a mixture of two thirds peat and one third loam, in a rough state, and made porous by the addition of sand; it must not be overpotted, and requires careful watering. Cuttings root with some difficulty in moderate heat.

NOTES ON FLOWERS AND FLOWERING PLANTS.

HIPPEASTRUM RETICULATUM, *Herbert* (netted-flowered Hippeastrum). — Amaryllidaceæ § Amarylleæ.—A bulbous plant, with long strap-shaped deep green leaves, more than an inch wide, and a stout flower-stalk three feet high, bearing one large flower, which is tubular, at the base, divided into six segments, nearly five inches long, purplish red, reticulated with a deeper colour, and having a white star at the bottom. A native of Brazil. Introduced in 1777. Flowers in April and May. Also known as *Amaryllis reticulata* (Aiton). *Culture.* — Requires a stove or warm greenhouse; rich loam, good drainage, and rest in the winter; propagated by offsets and seeds.

HIPPEASTRUM CALYPTRATUM, *Herbert* (veiled Hippeastrum). — Amaryllidaceæ § Amarylleæ. — A bulbous plant, with long strap-shaped leaves about an inch and a half wide, and a stout flower-stem furnished at top with two large flowers, which are slightly tubular, with six spreading segments, the three innermost being the broadest; they are green, tesselated with faint red marks, with a large screen at the bottom. A native of Brazil. Introduced in 1816. Flowers from May to August. Also known as *Amaryllis calyptrata* (Ker). *Culture.* — Requires a stove, rich loam, good drainage; propagated by offsets and seeds.

GOMPHOCARPUS FRUTICOSUS, *R. Brown* (shrubby Gomphocarpus).—Asclepiadaceæ § Asclepiadeæ veræ.—A shrubby plant, with straight wand-like round stems five or six feet long, opposite narrow lance-shaped leaves four inches long, and bunches of six or more nodding flowers; divided into five reflexed segments, white with a curious greenish crown in the centre, each flower nearly an inch across. A native of the Cape of Good Hope. Introduced in 1714. Flowers from June to September. Known also as *Asclepias fruticosa* (Linnæus). *Culture.*—Requires a greenhouse; free loamy soil; propagated by seeds or cuttings planted in sand, and put in a warm place.

Dendrobium mesochlorum, *Lindley* (green spotted Dendrobe).—Orchidaceæ § Malaxideæ-Dendrobæ.—A small growing epiphytal plant, with erect round stems, sharply pointed lance-shaped leaves, and flowers in fours; they are white, with a violet spot at the end of the petals and the lip, and a green stain in the centre of the latter; they have a faint but agreeable odour. A native of India [and Java ?], whence it was imported by Messrs. Veitch. Introduced in 1846. Flowers in June. *Culture.*—Requires a moist stove; turfy peat; propagated by division of the plants. (173)

Onobrychis radiata, *Bieberstein* (ray-fruited Saintfoin).—Fabaceæ § Papilionaceæ-Hedysareæ.—A herbaceous perennial, growing about a foot high, with pinnated leaves, formed of six or more pairs of ovate obtuse leaflets, with an odd one, and bearing long, showy racemes of butterfly-shaped flowers, white, with a central yellow spot. A native of stony hills in the region of Caucasus. Introduced about 1823. Flowers from June to August. It is the *Hedysarum radiatum* (Desfontaines); and the *H. Buxbaumii* (Bieberstein). *Culture.*—Hardy; sandy loam; dryish in winter; propagated readily by seeds. (174)

Epiphyllum coccineum, *var. grandiflorum, garden hybrid.*—Cactaceæ § Phyllanthidæ.—This is a very fine seedling cactus, apparently crossed between *Epiphyllum Ackermanni*, and *Cereus speciosissimus;* it has much the habit of the former, producing broad, flattened, wavy stems, which, however, have a tendency to grow triangular, still retaining the wavy, flattened expansions; the flowers are large and richly coloured, much resembling those of *C. speciosissimus.* It was raised by Mr. Green, gardener to Sir E. Antrobus, Bart., Cheam, and exhibited as a seedling at the Royal Botanic Society's Exhibition, in June, 1847, where it was awarded a prize. *Culture.*—Requires rich loamy soil; moist growing heat in spring; afterwards a dry, hot exposure, and to be kept rather dry in winter; propagated by cuttings. (175)

Gloxinia speciosa, *var. Handleyana* (Handley's Gloxinia).—Gesneraceæ § Gesnereæ.—This is a very handsome variety of Gloxinia, having the tufted herbaceous character of *G. speciosa*, and producing like it a profusion of fox-glove shaped blossoms, which in this variety are white, with a conspicuous broad stripe of red lengthways the tube, and on its lower part. We are not acquainted with the origin of this variety, but it is of course some garden hybrid, raised about 1846. *Culture.*—Requires to be started in heat in spring, and bloomed in a greenhouse; loam and leaf mould; propagated by cuttings of the plant, root, or leaves. (176)

Dendrobium Egertoniæ, *Lindley* (Sir P. Egerton's Dendrobe).—Orchidaceæ § Malaxideæ-Dendrobæ.—A small epiphytal plant, with erect round stems, and short racemes of from two to four blossoms, the sepals of which are pale pink outside, the rest of the flower pale, with dull yellow in the middle of the lip. The flowers are delightfully scented towards evening. It is probably a native of India, having been received by Sir P. Egerton from the Botanic Garden, Saharunpore. Introduced about 1844 (?). Flowers in May and June. *Culture.*—Requires a moist stove; turfy peat; propagated by division of the plant. (177)

Trichonema subpalustre, *Herbert* (Greek marsh Trichonema).—Iridaceæ.—A pretty little bulbous plant, of which a drawing was left by the late lamented Dr. Herbert, but unaccompanied by its history. It is a dwarf plant, with crocus-like foliage, and bearing on a stalk about two inches long a flower consisting of six ovate reflexed segments, of a purplish-lilac colour, white at the base. It was found by Dr. Herbert at Salonica and in the Ionian Islands. Introduced (?). Flowers in (?). *Culture.*—Hardy; sandy loam; propagated by offsets. (178)

Trichonema Pylium, *Herbert* (Pylian Trichonema).—Iridaceæ.—A pretty little bulbous plant, also left undescribed by the late Dr. Herbert. It is larger in all its parts than *T. subpalustre*, but has the same kind of crocus-like foliage, and its flowers consist of six ovate segments, white inside and yellow at the base, and streaked with purple on the outside. It was found by Dr. Herbert at Navarino. Introduced (?). Flowers in (?). *Culture.*—Hardy; sandy loam; propagated by offsets. (179)

Cleisostoma ionosmum, *Lindley* (violet-scented Cleisostome).—Orchidaceæ § Vandeæ-Sarcanthidæ.—A handsome epiphytal plant, with distichous, leathery, sword-shaped, oblique, drooping leaves, and spreading panicles of flowers; the latter are an inch across, flat, with five obovate, obtuse lobes, yellow, with cinnamon-brown blotches, and a three-lobed white lip, with a few red streaks; they smell pleasantly of violets. A native of Manilla. Introduced about 1843. Flowers in March and April. *Culture.*—Requires a hot moist stove; turfy peat, or to be fixed to a block of wood; propagated sparingly by division of the plant. (180)

Puya Altensteinii, *var. gigantea* (gigantic Altenstein's Puya).—Bromeliaceæ.—A noble herbaceous plant, with a short stem, from whence proceed the long, narrow, half-pendulous leaves, and the large strobiliform spike of flowers issuing from the centre of the leaves, and growing five or six feet high; the flowers are white, and consist of six long narrow segments, each breaking out from behind a large scarlet bract, the spike of bracts being the most conspicuous part of the plant. A native of South America. Introduced in 1845 (?). Flowers in February and March. *Puya Altensteinii* is the proper name of the plant known in gardens as *Pitcairnea undulatifolia.* *Culture.*—Requires a stove; peat and loam; propagated by division of the plant. (181)

Rosa anemonæflora, *Lindley* (anemone-flowered rose).—Rosaceæ § Rosidæ.—A pretty shrub, with smooth branching stems, and trifoliolate leaves, the leaflets of which are almost lance-shaped, and sharply serrated; the flowers grow in somewhat globular clusters; they are not individually very large, nor remarkable in colour, being pale blush, but the five outer petals are broad, while the centre is filled in by a quantity of smaller petals, in the same way as the blossoms of a double anemone. It is related to the musk-roses. A native of China. Introduced in 1845. Flowers in June and July. *Culture.*—Hardy; rich, loamy soil; propagated by cuttings, or layers. (182)

Hypocyrta leucostoma, *Hooker* (white-mouthed Hypocyrta).—Gesneraceæ § Gesnereæ.—A pretty, sub-shrubby plant, with erect, downy stems, and opposite, oblong-lanceolate, downy leaves, from the axils of which are produced numerous nodding, tube-shaped, downy flowers, of an orange colour, white at the extremity, where it is divided into five roundish segments; the lower side of the tube is much inflated. A native of New Granada. Introduced in 1846. Flowers in April. *Culture.*—Requires a stove; loam and peat; propagated by cuttings planted in sandy soil in a hot bed. (183)

Echinocactus hexædrophorus, *Lemaire* (hexædron Echinocactus).—Cactaceæ § Echinocactidæ.—A pretty species of the dwarf Cacti. The plant is sub-globose, or top-shaped, flattened at top, divided into large six-sided, depressed, glaucous, green, mammillæ, arranged in spiral lines, with deep furrows between, and each bearing a cluster of from four to seven reddish-brown subulate spines, varying in length from half an inch to nearly an inch. Two or three flowers are produced from the crown of the plant; they are white; the petals being streaked with rose on the outside, and yellow at the base; the stamens are yellow, and in the centre is a stigma of from nine to eleven white spreading rays. A native of Tampioca. Introduced before 1840. Flowers in June. *Culture.*—Requires a greenhouse; loam and brick rubbish; propagated by destroying the crown, when offshoots are produced, or by seeds. (184)

Achimenes cupreata, *Hooker* (coppery-leaved Achimenes).—Gesneraceæ § Gesnereæ.—A very distinctly habited, trailing species, with long stoloniferous rooting stems; the leaves are opposite, hairy, elliptic-obtuse, deeply net-veined, rather glossy, and dark coppery green above, purplish beneath; the flowers are rather small, with a slender curved tube, and a limb of five rounded dentate-ciliate spreading segments of a bright scarlet colour. A native of moist banks near Sona, New Granada. Introduced in 1845. Flowers in April and May. *Culture.*—Requires a stove, or warm greenhouse; light rich loam; propagated by cuttings either of the stems or leaves, or by its scaly tubers. (185)

Anguloa Clowesii, *var. flava* (yellow-lipped Anguloa).—Orchidaceæ § Vandeæ-Maxiliaridæ.—A handsome epiphytal plant, with oblong, pseudo-bulbs, broadly lance-shaped leaves, and large, pouch-like blossoms, rising singly on short stalks from the base of the pseudo-bulbs; the flowers are of a uniform pale yellow, except the middle lobe of the lip, which is orange coloured. A native of South America. Introduced in 1845. Flowers in May. *Culture.*—Requires a hot, moist stove; turfy peat; propagated by division. (186)

Æschynanthus speciosus, *Hooker* (showy Æschynanth).—Gesneraceæ § Cyrtandreæ-Didymocarpidæ.—A most beautiful epiphytal plant, and one of the handsomest of its handsome group. It is a small shrubby or sub-shrubby plant, with branches about two feet long, furnished with opposite (sometimes ternate) ovate lanceolate leaves, with an acuminated point, obscurely serrated margin, and of very fleshy texture. The flowers grow in terminal fascicles of from ten to twenty, beneath which is a whorl of from four to eight leaves; they are slightly downy, between three and four inches long, club shaped, curved at the extremity, full orange, with the upper part scarlet; the inside is orange, and each of the lobes of the corolla has a crescent-shaped black line separating this colour from the scarlet. A native of Java, where it was found attached to the trunks of forest trees, on Mount Asapan, near Bantam. Introduced in 1845. Flowers in April and May, and probably at other periods. Allied to *Æ. longiflorus.* *Culture.*—Requires a hot moist stove; to be planted in turfy peat soil, or attached to a block of wood; propagated by cuttings in sand, in a hot-bed. (187)

Burlingtonia granadensis, *Lindley* (New Granada Burlingtonia).—Orchidaceæ § Vandeæ-Ionopsidæ.—A fine epiphytal plant, with oblong acute fleshy leaves, and erectish racemes of about five white (or in a variety, yellowish) flowers an inch and a half long. A native of Pamplona, altitude 2,500 feet, between Chinacota and Chopo, in Colombia, where it is found growing on psidiums. Introduced in 1847, by Mr. Linden. Flowers in (? April). *Culture.*—Requires a hot moist stove; turfy or mossy peat soil, and to be placed on a block; propagated by division of the plant. (188)

CYRTOPODIUM BRACTEATUM, *Linden* (bracteated Cyrtopod).—Orchidaceæ § Vandeæ-Catasetidæ.—A fine species, resembling *C. punctatum.* Its flowers are produced in a simple raceme, with large membranaceous bracts; the flowers and bracts are bright yellow spotted with red. A native of scorching savannahs near Merida, at the height of 5,000 feet. Introduced in 1847, by Mr. Linden. Flowers in (? July). *Culture.*—Requires a hot damp stove whilst growing; turfy peat; propagated by division of the plant. (189)

GASTROLOBIUM VILLOSUM, *Bentham* (shaggy Gastrolobe).—Fabaceæ § Papilionaceæ-Pulteneæ.—A small shrubby plant, with opposite, ovate lanceolate obtuse mucronate leaves, somewhat undulated on the margins. The flowers grow in racemes; they are butterfly shaped, and of a bright orange colour. The leaves and branches are more or less clothed with shaggy down. A native of the Swan River colony, growing in muddy pebbly places, in woods. Introduced in 1845, by Messrs. Low and Co. of Clapton. Flowers in May. *Culture.*—Requires a greenhouse; sandy loam and peat; propagated by cuttings in sand, under a bell glass, or by seeds. (190)

OPHRYS FERRUM-EQUINUM, *Desfontaines* (horseshoe marked Ophrys).—Orchidaceæ § Ophreæ-Serapiadæ.—A tuberous rooted herbaceous perennial, with bluntly sword-shaped leaves, spotted on the under side, and an upright stem, six or eight inches high, bearing several flowers, which resemble those of our native bee-orchis; the lip is deep chocolate coloured, and has a horseshoe-like mark in its centre. A native of Corfu, where it was gathered on the summit of the Garonne Pass, by the late Dr. Herbert. Introduced about 1846. Flowers in May. *Culture.*—Hardy; loamy soil; propagated slowly by offsets. (191)

LÆLIA LINDENII, *Lindley* (Mr. Linden's Lælia)—Orchidaceæ § Epidendreæ-Læliadæ.—A very handsome epiphyte, with small compressed pseudo-bulbs, fleshy lanceolate toothed leaves, and large pale rose coloured flowers, growing from five to ten together near the top of a slender scape. It is a native of Cuba, growing on single trees, in the savannahs between San Andres and the Saltedero. Introduced in 1847, by Mr. Linden. Flowers in (? June). *Culture.*—Requires a stove; turfy peat soil; propagated by division of the plant. (192)

EPIDENDRUM OXYPETALUM, *Lindley* (sharp petalled Epidendrum).—Orchidaceæ § Epidendreæ-Læliadæ.—An epiphytal plant, with small roundish oval pseudo-bulbs, linear lance-shaped coriaceous leaves, and dull yellow flowers with a three-parted lip, on a scape about a foot high. A native of Cuba, in the forests of Guantanama. Introduced in 1847, by Mr. Linden. Flowers in (? July). *Culture.*—Requires a stove; turfy peat soil; propagated by division of the plant. (193)

PENTSTEMON GORDONI, *Hooker* (Mr. Gordon's Pentstemon).—Scrophulariaceæ § Antirrhinideæ-Cheloneæ.—A herbaceous perennial, with an erect stem, growing from a foot to a foot and a half or more in height. The root leaves are spathulate; those of the stem broadly lanceolate, and somewhat stem clasping, the upper ones gradually becoming bracts. The flowers grow on many-flowered peduncles, from the axils of the upper leaves, the whole forming a long leafy panicle; they are, individually, large and handsome, and of a rich amethystine blue. A native of the Rocky Mountains. Introduced in 1846. Flowers in June and July. It somewhat resembles *P. speciosus.* *Culture.*—Hardy, but impatient of damp in winter, and therefore requiring a dry cool frame; light loamy soil; propagated by cuttings of the young shoots from the base of the plant, or by seeds. (194)

CATTLEYA BULBOSA, *Lindley* (bulbous Cattleya).—Orchidaceæ § Epidendreæ-Leliadæ.—This is one of a group of very handsome small growing species. The present plant has short oval stems, resembling pseudo-bulbs, from the top of which a single oval leathery leaf is produced, and also a single-flowered peduncle. The flowers are large and showy, with broadly lance-shaped sepals, larger oval undulated petals, and a flat "shovel-shaped" lip, the latter deep crimson, the other parts light rose. Supposed to be a native of Brazil. Introduced before 1847. Flowers in May. *Culture.*—Requires a cool dryish stove, and to be placed on a block of wood; propagated by dividing the plant when just starting into growth. (195)

NYMPHÆA GRACILIS, *Zuccarini* (slender Water Lily).—Nymphæaceæ § Nupharidæ.—A very elegant little aquatic plant, with a sub-globose rhizome, sub-orbiculate dark green shiny leaves, bluntly toothed on the margin, the posterior lobes being rectangular, with the edges lying parallel; they measure about seven inches in the longest diameter, and six inches in the shortest. The flowers are about three inches in diameter, white, and slightly odorous; the numerous yellow anthers form a pretty contrast with the white petals. A native of Mexico, growing in lakes and ditches. Introduced in 1847. Flowers throughout the summer. The rhizomes are eaten, and bear the name of *Cabeza di negro*. *Culture.*—Requires a greenhouse ; the rootstocks potted in loamy soil, and set into a cistern of water at a moderate depth ; propagated by means of offsets produced on runners from the old rhizomes, and by seeds. (196)

OPHRYS TABANIFERA, *Willdenow* (gad-fly Ophrys).—Orchidaceæ § Ophreæ-Serapiadæ.—A tuberous rooted herbaceous perennial, with sword-shaped leaves springing from the root, and an erect stem six or eight inches high, bearing two or three blossoms somewhat resembling those of our native bee-orchis. It was found in low swampy ground "near Clarentia," as is one of the South European orchids obtained by the late Dr. Herbert. Introduced originally in 1826, and again about 1846. Flowers in May. *Culture.*—Hardy ; loamy soil; propagated very slowly by offsets. (197)

DRYANDRA CARDUACEA, *var. angustifolia* (narrow-leaved thistle-like Dryandra).—Proteaceæ § Folliculares-Banksidæ.—An erect much-branched shrub, with scattered, rather distant, linear-lanceolate, rigid, sinuate-dentate leaves, the teeth tipped by a sharp spine ; the upper side is dark green, the under side clothed with compact white down. The flower heads, which resemble thistle heads, but are yellow, terminate the short branches, and are as it were surrounded by a rosule of leaves. A native of the Swan River colony of New South Wales. Introduced about 1845. Flowers in the spring months. *Culture.*—Requires a greenhouse ; free turfy loam ; propagated by imported seeds, or slowly by cuttings planted in sand, and placed in a hotbed. (198)

SALVIA LEUCANTHA, *Cavanilles* (white-flowered Sage).—Lamiaceæ § Monardeæ-Salvidæ.—A handsome shrubby species of Salvia, growing about two feet high, with four angled branches, woolly when young, and bearing narrow oblong-lanceshaped opposite leaves, which on the under side are furnished with white woolly down. The flowers grow in whorl-like patches, forming an elongated spike-like raceme, the rachis of which is clothed with violet coloured wool ; the calyx is clothed with a rich violet or lavender coloured wool ; and the corolla, also woolly, is pure white, forming an elegant contrast with the calyx. A native of Mexico. Introduced originally to our gardens in 1825, and subsequently from Nice by Lady Smirke, about 1846. Flowers in June and July. *Culture.*—Half-hardy, or requiring a greenhouse ; loamy soil ; propagated by cuttings. (199)

MAXILLARIA NIGRESCENS, *Lindley* (blackish Maxillaria).—Orchidaceæ § Vandeæ-Maxillaridæ.—An epiphytal plant, with oval compressed blackish pseudo-bulbs, oblong strap-shaped leaves an inch and a half broad, and scapes about four inches long, bearing the flowers, which are rather large, and have deep blood-red petals and a purple lip. A native of the forests of Merida, at the height of 6,000 feet. Introduced in 1847, by Mr. Linden. Flowers in (? June). *Culture.*—Requires a stove ; turfy peat soil ; propagated by division of the plant. (200)

BEFARIA LEDIFOLIA, *Humboldt, &c.* (ledum leaved Befaria).—Ericaceæ § Rhododendreæ.—A handsome shrub, growing three or four feet high, and much branched, with oblong somewhat mucronate leaves, revolute on the margins, glaucous beneath, and beset with glandular hairs on both sides along the middle nerve ; the flowers are purple, and grow in handsome terminal clusters. The peduncles, pedicels, branchlets, and calyx, are clothed with viscous glandular hairs. A native of South America, on the top of Lela de Caraccas. Introduced in 1847, by Mr. Linden. Flowers in June. It is also called *Bejaria*. *Culture.*—Requires a greenhouse ; sandy peat soil ; propagated by half-ripened cuttings in sand in a moderate heat, or grafted in the same way as Indian azaleas on the *Rhododendron ponticum*. (201)

LEUCOTHÖE PULCHRA, *De Candolle* (elegant Leucothöe) —Ericaceæ § Ericeæ. — A handsome shrubby plant, growing two feet or more high, glabrous in every part ; the branches are erect and many-angled ; the leaves closely placed, alternate, elliptical-cordate, coriaceous, an inch or so in length ; the flowers grow in axillary drooping racemes, four inches or more in length, bearing numerous white ovate-cylindrical blossoms, all pointing downwards. A native of Brazil. Introduced before 1846. Flowers in May. Also called *Andromeda pulchra* (Chamisso), and *Aganota pulchra* (G. Don). *Culture.*—Requires a greenhouse ; peaty soil ; propagated by layers. (202)

GLOXINIA SPECIOSA, *var. alba-sanguinea* (blood-stained Gloxinia). — Gesneraceæ § Gesnereæ.—A handsome variety of the well-known *G. speciosa*, and somewhat resembling another variety named *Handleyana*. The principal colour of the flowers is a blush-white, the lower side of the flowers having a broad conspicuous stripe of rich crimson-red lengthways the tube. It is a garden variety, with the origin of which we are unacquainted. Raised about 1846. *Culture.*—Requires a warm frame in spring, and greenhouse in summer ; loam and leaf-mould ; propagated by cuttings of the plant, root or leaves. (203)

VIBURNUM PLICATUM, *Thunberg* (plaited

leaved Viburnum).—Caprifoliaceæ § Sambuceæ.—A handsome deciduous shrub, growing from eight to ten feet high, with dark green, somewhat plaited, coarsely serrated leaves, broad, narrowed to the base, and furnished with an abrupt point. It is a profuse bloomer, bearing its white flowers in round snowball heads of the size and with the appearance of the "double" Gueldres rose. A native of the northern parts of the Chinese empire, and much cultivated in the gardens of the rich. Introduced in 1845. Flowers in April. *Culture.*—Hardy; common soil; propagated by cuttings or layers. (204)

Berberis parviflora, *Lindley* (small flowered Berberry).—Berberidaceæ § Berberideæ.—A small slender evergreen bush, with obovate leaves, with from three to five spiny teeth near the end, glaucous on the upper side, clear green beneath. The flowers are small and deep orange-yellow, and grow in few-flowered racemes about as long as the leaves. Its history and native country are unknown; the plant was presented by Messrs. Lee, of Hammersmith, to the Horticultural Society; and is supposed to be South American. Introduced before 1844. Flowers in May. *Culture.*—Hardy; common soil; propagated by layers or cuttings. (205)

Amomum vitellinum, *Lindley* (yolk of egg-coloured Amomum). — Zingiberaceæ. — A perennial reedy plant, growing about two feet high, with oblong wavy pale green leaves, and deep yellow flowers strongly veined with red, and growing in short close spikes seated among the upper leaves. Supposed to be an East Indian species. Introduced in 1845. Flowers in April and May. *Culture.*—Requires a stove, with plenty of heat and moisture when growing, and to be kept dry when at rest; useful as a flowering plant to associate with ferns in shady places; sandy loam and leaf-mould; propagated by dividing the plants. (206)

Gloxinia speciosa, *var. Fyfiana* (Mr. Fyfe's Gloxinia). — Gesneraceæ § Gesnereæ. —A very handsome and distinct variety of Gloxinia, with the habit and foliage of *G. speciosa*, but instead of the usually drooping and unequally inflated flowers which occur in this genus, they are, in this case, quite erect on the top of the stalks, and evenly formed, resembling an inverted bell; the colour is French white, with a broad ring of purplish lilac around the mouth of the tube. A garden hybrid, raised at Rothsaye in Bute, in 1844. This variety is supposed, but not certainly known, to have been produced from seed of *G. maxima.* (207)

Viburnum macrocephalum, *Fortune* (large headed Viburnum).—Caprifoliaceæ § Sambuceæ.—A deciduous large shrub, covered all over with coarse scurfy hairs, and having blunt ovate slightly-toothed leaves, and large compound pyramidal cymes of snow white flowers; these heads of flowers in the neuter state are as much as eight inches in diameter, and resemble a hydrangea; the flowers are each about an inch and a half in diameter. A native of the north of China. Introduced in 1844. Flowers in June. *Culture.*—Probably hardy; good garden soil; propagated by cuttings or layers. It is handsome as a pot-plant grown like a hydrangea, and thrives in loam and peat. (208)

Berberis hypoleuca, *Lindley* (white-leaved Berberry).—Berberidaceæ § Berberideæ.—A fine evergreen shrub, of vigorous growth, with broadly ovate leathery leaves, dull green above, and white beneath, the margins spinous in the upper half; the flowers grow in racemes not longer than the leaves, and are small and of a pale yellow colour. A native of the north of India. Introduced about 1844. Flowers in May. *Culture.*—Nearly hardy—injured only by severe winters; good garden soil or rich loam; propagated readily by layers formed of the moderately young shoots, or by seed. (209)

Grevillea sericea, *Brown* (silky Grevillea).—Proteaceæ § Folliculares-Grevillidæ.—An evergreen shrub of moderate stature, the branches furnished with alternate lance-shaped leaves, having a small sharp point at the top; the flowers grow in a crowded manner at the ends of the small twigs, and consist of four narrow segments, scarcely separating, and curved at the apex, the long projecting style issuing from the back of the flower near the base; they are of a reddish purple colour. A native of New South Wales. Introduced about 1790. Flowers from October to May. *Culture.*—Requires a greenhouse; loam and peat; propagated by cuttings under a bell-glass. (210)

Heliophila trifida, *Thunberg* (trifid Sun-cress).—Brassicaceæ § Diplecolobeæ-Heliophilidæ. — A slender branching annual plant, growing about a foot high, with the lower leaves trifid, sometimes five cleft, the lobes filiform; the upper ones are simply filiform; the flowers grow in terminal racemes on most of the branches, and consist of four roundish petals forming a small nearly round flower of a gay ultra-marine blue. A native of the sandy plains near Cape Town. Introduced in 1819. Flowers from June to September. Also called *Heliophila pinnata* (Linnæus fil). *Culture.*—Half-hardy; suitable for growing in pots in the greenhouse, or planting in warm sheltered places out doors in summer; light rich soil; propagated by seeds sown in February in slight heat. (211)

THE KITCHEN GARDEN.

Sow angelica, borage, cabbages, carrots, cauliflowers, chervil, coriander, cress, dill, lettuce, onions, parsley, radish, salads, spinach, and turnips.

Plant and Transplant brocoli, cabbages, cauliflowers, endive, herbs, lettuce, and water-cress.

General Directions.—It is an excellent sign of good management, to see that every part of the garden is covered with a useful crop. Gather and properly store the ripening crops of all kinds; and remove such as peas, beans, &c. when they have done bearing; where it can be done, trench the ground and replant it immediately. Suffer no weeds to run to seed; and allow no crop to suffer for want of thinning, hoeing, or watering. Earth up advancing crops when dry.

Angelica.—Sow as soon as the seed is ripe, in a rich loam, and rather a shady place.

Borage.—Sow a little in any common soil, and almost any situation; a few plants will suffice.

Brocoli.—The last planting for the season should now be made as soon as possible; remove the decayed leaves from the early crops.

Cabbage.—Sow a few to remain in the bed all the winter: make a thick planting, say at six inches in the row, and sixteen between the rows; in the winter every other plant may be drawn for use, and the others left till the spring.

Cardoons.—Earth up the stems of such as have nearly attained maturity; this should only be done when they are quite dry.

Carrots.—Sow in a warm spot; and towards the end of the month a slight hot-bed may be made for another sowing, but this is seldom necessary; go over the main early sowings, and remove all seed weeds.

Cauliflowers require protection in the winter, and provision must be made now, after any or all of the following plans:—On the warmest border that can be selected, fill as many hand-lights as will be required, planting them from four to six inches apart; or use a frame similarly; or plant them at the foot of the garden wall in different aspects, and slightly protect them when the weather is severe. Another good plan is to pot them, putting the best singly, and keeping them in a frame or cold house close to the glass. In all cases, after a few days, give air profusely. Those ready for use must be cut and preserved till wanted; and at the end of the month the most forward may be planted thickly into a frame, where they will continue to produce their flower heads, and will last till the brocoli comes in.

Celery.—Earth up slightly all except the latest crops; do not bank them up too much; a small proportion only should be fully earthed up, to keep a supply in succession; it must be done when they are quite dry.

Chervil.—Scatter a little more seed in any spare corner, if it is much in request.

Coriander is best sown in autumn; give it an open situation, and rich fresh soil.

Cress.—Select a rather sunny place to make a sowing at the end of the month.

Dill.—Sow soon after the seeds are ripe, in a light soil.

Endive.—Plant a few more out where they can receive slight protection in winter; choose a dry day to tie up, or cover up, a few of the best for blanching, which must be attended to from time to time, so as to keep a succession fit for use.

Herbs.—Almost all the sorts may be increased now, either by division of the roots or by seeds. Tie up the parts gathered for winter use in small bundles, hang them in a dry place; some use an oven for drying; and gather off the leaves, and keep them in tin canisters, which is an excellent plan, as it preserves the aroma of the herb.

Lettuces.—Plant out at the foot of the walls, also in hand-lights; where they are much required, planting out in a frame will be necessary.

Onions.—Gather as soon as they stop growing, and lay in a dry place preparatory to storing them away: they may be kept either tied up in ropes, or spread on shelves or a dry wood floor, whichever is most convenient.

Parsley.—It is scarcely advisable to sow any more this season, but the early crops or part of them will be made more useful by being cut over, and made to spring anew.

Potatoes when ripe must be taken up, carefully laying aside all the diseased ones, and spreading the whole out to dry; after which remove them to the store-house, and spread them on the floor. Where young potatoes are wanted at Christmas, now is the time to plant such varieties as Chapman's kidney, in a slight heat, in small pots.

Radishes must be sown on a slight hot-bed, and require plenty of air.

Salads generally will require some slight artificial air; a little hot dung and frames must be used at the end of the month.

Spinach.—Thin out the plants, leaving them from six to nine inches apart; another sowing may be made soon in a good situation.

Tomatoes.—Cut away most of the young shoots, so as to expose the fruit to the sun; and cut away also all very late fruit: ripen off the early ones by laying them in the stove or greenhouse, or in a close frame.

Turnips may yet be sown in a very warm place, but do not depend much upon them: attend to the thinning and hoeing of the earlier sowings; those that are too late for bulbing may be worth attention for their tops.

Water Cress.—New beds may now be formed, and planted at six inches apart; the old established beds should be dried off and cleaned, and all blanks filled up with vigorous young plants.

THE FRUIT GARDEN.

General Directions.—Look over and pick daily the ripening fruit of all the finer sorts. Finish the summer thinning, pruning, and nailing, having given all the light and sun attainable. Keep down vermin, such as wasps, &c.; allow the blemished fruit to remain close under the walls to entice them, and kill them when collected together; protect the finer fruit of such as peaches, by covering with fine gauze. The fruit room requires close attention. Turn anew those fruit that were early gathered, and pick out all which indicate the smallest blemish; lay the best carefully in a single tier on shelves, and keep the place dark. The inferior sorts may be laid thicker, but must at no time be suffered to heat; and remember to use these first. If the fruit room is exposed to the sun, air must be given to prevent sweating, which is always injurious. Always handle choice fruit as if they were eggs; and indeed fruit of all kinds as far as practicable.

Apples.—When gathering the keeping sorts be sure they are ripe; cut a fruit or two open, and if the pips are still white—not turning brown—they are not ready.

Apricots.—Look over every morning, and pick the ripe ones; there is no other method by which the fruit can be kept free from blemish.

Cherries.—The morellos must be protected from birds, &c. Syringe the trees of the early sorts with clear water, in which soot and wood ashes have been steeped.

Currants.—Those which are to be preserved must be kept matted perfectly close, for if the least aperture is allowed, the birds may enter and injure them.

Figs.—Gather in the morning: it may be well to cover the finest fruit with gauze, or cotton wadding.

Filberts may now be gathered when dry and packed in hampers for keeping.

Gooseberries.—Those which are matted up for preserving must be carefully covered again after being gathered from.

Nectarines and Peaches.—Preserve from vermin, and hand pick the ripe fruit daily. If the walls are flued apply a little fire in the day time to ripen the wood.

Pears are not so easily damaged as apples, but the keeping sorts must be gathered with equal care, and laid thinly on the shelves: look over the early sorts, and remove the blemished ones.

Plums.—Pick those to be used for dessert just as they are thoroughly ripe; when gathered in quantity spread them thinly out in the fruit room.

Strawberries.—Make new plantations on a deep and rich loamy soil, in rows thirty inches apart and eighteen inches in the row. Remove all runners from the old plantations, and top dress with a rich soil of loam and decomposed dung.

Vines.— Where these are growing upon flued walls it is well and safe to apply a little fire now, to hasten the ripening both of the wood and fruit.

THE FORCING GARDEN.

General Directions.—The present period nearly answers to winter in this department: keep the trees at rest. Clean out all the houses, frames, and pits which are emptied of fruit; white-wash the flues and walls with hot lime, and top-dress and prune the early houses. Renew the hotbed linings as required. Upon the whole, considerably less water will be required now than formerly.

Apricots.— Remove the ripening leaves, and keep the trees cool and clean.

Cherries.—Those in pots must not have much water, and if they have been exposed they may be put under glass: keep the house always open except in heavy rains: pass the hand lightly up the shoots to clear off the dead leaves.

Cucumbers. — Temperature from 60 to 90 degrees. Renew the linings so as to keep up a brisk heat; shut up about two o'clock p.m.; the heat must be steady, and moist. The winter plants must be kept scrupulously clean and healthful, and are best trained on a trellis. Fruits reserved for seeds may be cut open, the seed slightly washed, and thoroughly dried.

Figs. —Temperature from 60 to 80 degrees. Clean off the ripening foliage: put a few of the pots (which were very early) in readiness to be again placed in heat; water as little as possible.

Melons.—Temperature from 65 to 90 degrees. Maintain a lively heat by means of linings: water only in the mornings, and then sparingly: give air at night to the ripening fruit, and shut up the late crops early, with strong sun heat.

Musas.—Temperature from 70 to 90 degrees. Keep the atmosphere moist, excepting where the fruit is ripening. On those planted out two suckers may be allowed to remain attached to the parent, and some fresh soil should be laid about them, the old stem being cut away close to the ground.

Mushrooms.— Temperature from 55 to 60 degrees. When the heat of the prepared succession bed has declined so as to be about milk-warm (it should never have been overheated previously) it may be spawned, by wrapping the pieces of spawn first in a little strawy dry litter, which will assist its running; after a few days the covering of fresh loam to the thickness of two inches should be put on, and firmly beaten down. The beds in a bearing state are benefited by having the loose hay strewed over them renewed.

Nectarines and Peaches. — Temperature from 55 to 75 degrees. The late houses must have air night and day; and still more the early houses. Pass a broom gently up the branches of those whose foliage is ripe, so as to remove the leaves when they separate easily; syringe a little with the clear liquor of soot, lime, and wood ashes mixed in water; non-attendance to trees in this stage ruins many.

Pine Apples. — Temperature from 70 to 90 degrees. Keep up a brisk heat: admit air at night, unless it is very windy and cold. In places where one house is made to grow the whole stock, put the ripening fruits at the warm end, those just started in the middle, and the young plants at the cold end. Shift those which require it. Pot the strong suckers; use rough turfy loam, peat, and charcoal, and no manure; give the latter in the liquid form, and apply it freely to those started into fruit—say once a week; syringe freely.

Strawberries.—Temperature from 55 to 75 degrees. Those which are being prepared for forcing early in spring should be freed from all runners; and they are amazingly benefited by being kept in a frame, to avoid the extreme wet to which they would otherwise be subject. Give water moderately, and admit plenty of air, by tilting up the lights.

Vinery.—Temperature from 60 to 80 degrees: withhold water, and give air plentifully. Remove decaying berries as soon as they are observed; give a little fire heat with air at night. The young vines in pots must be ripened off; bring them into a dry house and gradually withhold water. Prune the early houses; and have the vines washed with a solution of tobacco, sulphur, and lime-water.

FLOWER GARDEN AND SHRUBBERY.

Sow hardy annuals as recommended in August, and do it early; also such as polyanthus, primrose, sweet William, Canterbury bell, &c.

Plant and Transplant, perennials, biennials, and bulbs; also evergreen and deciduous shrubs. Take up and put the finer campanulas and the more tender things into pots, to be afterwards removed to the frames.

General Directions.— Continue to propagate where required. At the end of the month, a few of the best specimens of green-house plants should be taken up and potted.

Make notes of the most suitable things to plant for the flower garden, and set to work to procure and increase them for another year.

Alpines must be put in their winter quarters at the end of the month: make the frame face the north, and give air freely: meanwhile give them a cleaning and top-dressing.

Auriculas.—Clear off the yellow leaves and decayed stalks: stir the soil and examine the drainage: by the end of the month, put them in their winter frame, keep them free from wet, and admit plenty of air.

Bulbs (Dutch).—Procure these as soon as possible, and have them potted (if early bloom is required), and covered six inches with sawdust or coal-ashes, and put in a cool and dry situation. All kinds of bulbs may be planted out this month, but next month will do: meanwhile, renew the beds with fresh soil.

Carnations.—Pot off the rooted layers in five-inch pots, using a soil of rotted turf torn and broken by the hand; give thorough drainage, and a dry bottom to the frame.

Calceolarias.—Increase the good herbaceous sorts by offsets, and by cuttings the shrubby sorts; Kayana is amongst the best of the latter class. Seeds may be sown early this month, the plants from which will flower early in spring; sow in a slight heat, and push them on: use peat and sandy loam.

Daffodils may either be planted during this or the next month; a deep loamy soil suits them.

Dahlias.—Thin the spray or weak shoots when thick; tie up the branches, and shade the best flowers. From the show plants pick off and throw away every bad bloom; also the fading blooms, except such as are kept for seed: gather seeds early. Striped varieties commend themselves as border ornaments.

Fritillarias may be put in now, or taken up and increased by division.

Fuchsias. — Withhold liquid manure, as flower and not growth is wanted now: take up and pot the most handsome by the end of the month.

Hyacinths.—Have these ordered immediately; select the most distinct and striking colours for general purposes; and rather grow a quantity of any good varieties of suitable colours, than many different kinds: the single sorts are best for forcing, and should be potted early.

Laurels, *Laurustinus*, and, indeed, every other shrub, may now be transplanted with safety, and with the greatest success; they may also yet be layered, and struck from cuttings put in sand.

Lobelias.—Many of these do well to take up, and they give a good effect to the greenhouses for some time after being lifted; however, it is better to defer it till the end of the month; when taken up, let the blank be as little seen as can be.

Mimulus.—Very many kinds are quite hardy; still the finer varieties, being all easily raised from cuttings, may be propagated, and kept under glass for the winter.

Petunias.—Propagate by cuttings the good sorts only.

Pansies may yet be raised from cuttings, and will get established before winter: keep the finer sorts where they will find shelter.

Pelargoniums.—Propagate largely of the select sorts; they require no shading and little water.

Picotees.—Water the layers, and pot off those rooted, as with carnations.

Pinks.—Plant out the well rooted pipings in nursery rows in a good situation; and pot the weaker plants.

Roses.—The Chinese and Tea-scented may be slightly pruned, and cuttings made of the prunings; these will root freely under a hand-glass, or even in a sheltered border: put the finer hybrids in pots, and strike in a slight heat or in the greenhouse.

Salvias.—Increase these extensively now by cuttings, and keep them in store pots.

Stocks.—Pot off the young plants, and put them in a frame; too many of the good sorts can hardly be obtained.

Tulips will be better planted next month; meanwhile prepare good fresh loam, and some decomposed cow-dung, to be placed as a layer three inches in thickness, below twenty inches of soil.

Verbenas.—Propagate boxfuls and potfuls, and keep them in these until spring; they are the better of a slight heat to root in, and require to be shaded.

Wallflowers may still be planted out in masses throughout the borders; stick the double sorts, and keep and grow as many as can be accommodated.

WINDOW GARDENING.

If a proper supply of evergreens for winter decoration has not been provided, no time should be lost in making up the deficiency. Neat handsome plants, of any of the hardiest sorts, should be potted in the smallest convenient sized pots, and regularly watered, shaded, and otherwise attended to until sufficiently established. One of the very best plants for this purpose is the *Aucuba japonica*, which stands the smoke and dust of the most populous towns almost with impunity. Others are the *Andromeda floribunda* and *Garrya elliptica*, possessed of still greater attractions, as the first flowers abundantly in March and April, and the other still earlier. The list may be still further extended with spruce firs, red cedars, junipers, arbor-vitæs, laurels, phillyreas, and nearly any other hardy evergreens. The main points in their management are these: to be careful they do not suffer for want of moisture, and in case the leaves are frozen, to water the plants over head early in the morning, when the frost is over, and shade them from the direct rays of the sun.

Bulbs, such as hyacinths, narciss, &c., for the earliest crop, especially in glasses, should be procured as early in the month as possible, and placed in proper places for the formation of abundance of roots. If placed in pots, they should be plunged in a shady, rather dry situation, in coal ashes, or other similar materials; or if in glasses, they should be kept in an airy, dark place the better to develope their roots.

Begonias.—Dry off the roots as the bulbous sorts show symptoms of resting, and lessen the supply of water to the others, except such as may be growing freely.

Camellias.—Keep the plants in an airy situation, and water very carefully, never allowing the ball of earth to become dry. Keep the foliage perfectly clean, by washing with a sponge if necessary.

Cinerarias.—Shift such as require it, and excite the forwardest plants by placing them in a warm exposure, supplying them rather plentifully with moisture, and occasionally with manure water.

Fuchsias.—Any that are getting shabby should be gradually brought to a state of rest by withholding water; they will push the earlier next season. Keep such as are in perfection carefully watered, reducing the quantity as the days shorten.

Geraniums.—Shift and stop such as require it, but do not stop such as are wanted for early flowering. Cut down others as they go out of bloom, and let them rest for a month without water.

Myrtles may be treated nearly as directed for hardy evergreens, but will need more protection as the season draws in: keep the foliage clean.

Roses.—Cut off the decayed blooms of the Chinese varieties, and prune the plants to a neat shape; put in cuttings of them under a hand-glass if more are wanted.

Primulas.—Repot as necessary, and encourage a few with a warm corner for early flowering: by this means, and having plants of different ages, a very long succession of bloom may be kept up.

Violets.—Pot up from the open ground, and plunge the pots in a sheltered place, watering very carefully, as they suffer much if water is allowed to stagnate round them.

Wardian Cases.—If the plants have become shabby, replace them by a winter set. Few plants are better adapted for this than the smaller and hardier ferns and lycopodiums. Of the latter a pretty contrast is produced by *L. cæsium, L. helveticum.* and *L. stoloniferum.*

PITS AND FRAMES.

The general operations will consist in preparing for the reception of the plants, in providing protective coverings against frost, and in the routine work of watering, giving air, &c.

Annuals.—Various of the most interesting sorts should be sown in small quantities for turning out early, as well as to grow for the conservatory. A considerable sowing of mignonette should be made, as also of intermediate and ten week stocks. As soon as the plants are up, great attention must be paid to giving air at all favourable times to prevent the plants drawing up weakly; and also to watering them, as they are very liable to rot off if kept too moist.

Half-hardy plants, as calceolarias, petunias, verbenas, &c., should be placed in the driest pits, where there is means of applying heat in severe weather. Continue to pot off rooted cuttings, keeping them close and shaded until established: also put in cuttings of such things as there may be a short stock of. These latter should be put in thinly, say from ten to twenty in a five inch pot, in which they may stand all the winter; when well rooted they may be treated in the same way as the others. Fumigate as often as the green fly makes its appearance.

Forcing-pit.—If very early flowers are wanted, a batch of lilacs, roses, deutzias, and other plants may be placed in the pit about the middle or end of the month; do not close the house until the nights become cool, when by shutting up early in the afternoon, a sufficient heat may be maintained for the present.

But if forced flowers are not wanted until Christmas, or after, October will be quite soon enough to begin. The plants intended for early use may, however, be benefited by being placed in the house, and kept rather dry, so as to render them more excitable when heat is applied. All Dutch or other bulbs intended for early spring use should be procured as soon as possible, potted, and encouraged to fill the pots with roots.

THE GREENHOUSE.

Temperature.—From 60 to 70 degrees by day, and from 45 to 50 degrees by night.

Ventilation.—Leave air on all night, and give as much as possible during the day, so that the plants from out-doors may not feel too sudden a change.

Watering.—Apply water very carefully,

but be sure the mass of soil, technically "the ball," gets thoroughly moistened whenever it is necessary. In hot dry weather the supply must still be liberal, but not so liberal as to start any plants which may have set their growth.

Potting.—Shift or repot whatever plants may require it, but most of the hard-wooded plants will stand over till the spring. Examine the roots of all that have been exposed during summer, before they are staged, and see that the drainage is in an efficient state; slightly stir the surface, and add a small coating of soil to render the plants neat, and also to exterminate moss and weeds.

Soils.—Make use of fine weather to complete good supplies of the different earths required, and ridge or stack them up so as to be well exposed to frost, but not spread about too widely so as to be washed by every shower.

Dressing.—Stake and tie up all plants as they are brought into the house, and renew rotten or defaced tallies. Remove all faded flowers or decaying leaves, and keep everything scrupulously clean.

Insects.—Examine the plants carefully, and remove all scale, white bug, green fly, or other insects by which they may be attacked, previously to staging them; and, if necessary, keep the worst in one group, or a separate house, so as to have them the more thoroughly under command.

Aloes, and other succulents, should be protected from wet, and the smaller and tenderer kinds should be removed to a light and airy part of the house.

Agaves, and large succulents, should be allowed to dry gradually by reducing the supply of water, and protecting them from rains, but need not be housed yet.

Alströmerias should be kept perfectly at rest after their foliage dies down, but not so dry as to shrivel up the tubers.

Annuals.—Pot off such as were sown last month, or collect self sown plants from the open borders, and keep them in frames or pits; sow more of the choice sorts for a succession.

Azaleas.—House the young plants, and such as are wanted first in flower, but keep them very cool and airy. The others should be protected from heavy rains, but all should be carefully and thoroughly watered.

Calceolarias.—Keep cool at the root by a liberal supply of water, and give them an airy situation; shift such as may require it.

Camellias.—House these towards the middle or end of the month, giving plenty of air day and night. Place the forwardest plants in a rather warmer situation. Water regularly and carefully.

Cape Bulbs, as ixias, gladiolus, &c., should still be kept dry, unless any of them should show signs of growth, when they should be immediately potted, and placed in the coolest part of the house, and very sparingly supplied with water at first. Keep the others dry, if possible until the spring.

Cephalotus follicularis (New Holland pitcher-plant).—If this has been placed out of doors, or in a comparatively cool place, it should now be returned to a warmer place, and kept regularly damp, with a glass over it.

Cinerarias.—Continue to propagate, if necessary, and shift such as require it: allow some to grow away for early flowering, and keep the others stopped in, to form large bushy plants.

Chrysanthemums.—Pot up layers, and make fresh ones of the points of the shoots, so as to form dwarf small plants. Cuttings three or four inches long may also be struck for the same purpose. Shift such as are growing in pots into those they are to bloom in, and do not stop the shoots after the middle of the month. Water liberally, using manure water occasionally.

Crassulas, and allied plants, as sempervivum, should be housed, and very sparingly watered. Keep them near the light.

Cyclamens.—Re-pot the early flowering sorts, and keep them in a cool airy place, giving very little water for some time.

Epacris.—House these plants, giving all air possible day and night, and watering regularly and carefully.

Ericas.—Get all of these, especially the smaller and more delicate kinds, under cover; examine the roots very carefully, and give air day and night. Water cautiously, but the roots must never be dry. The side sashes should not be closed, except against strong winds or beating rains. If any of the plants show signs of mildew, they should be placed apart in a pit or frame by themselves, and dusted with sulphur; or other means taken to get them clean before they are again placed with the rest.

Fuchsias.—Continue to regulate such as are still in a growing and flowering state, assisting them with manure water occasionally. Plants wanted to flower early next year should be gradually dried off, and got into a state of rest for two or three months, especially those with very fleshy or tuberous roots.

Gompholobiums and slender creepers should be housed before any heavy rains, in a light airy situation, and should be watered very carefully. Continue to regulate the shoots of such as are still in a growing state.

Haworthias, Apicras, &c. should be housed by the middle of the month, or earlier if wet weather: place them in a dry airy situation, and water sparingly, gradually reducing the quantity.

Helichrysums.—Get them into the house before much rain falls; place them in an airy part, and water carefully.

Leschenaultias should be housed early, placing the smaller plants in a rather warm but airy place. Water very carefully, but mind that the bottom or centre of the ball of roots does not get dry, or death will most likely result.

Lilium japonicum (Japan Lily).—Pot any that are making a start to grow, and place them in a cool frame. Turfy loam and sand with a little peat and leaf mould will suit them well. Water very sparingly.

Mignonette.—Sow in pots, and plunge them in frames or pits near the glass; give air at all times, in rainy or windy weather by tilting the sashes on the side opposite to the wind: water very carefully, gradually reducing the quantity as the weather becomes colder. Keep the tree mignonette regularly stopped and tied up.

New Holland Plants, as acacias, hoveas, bossiæas, &c. may be housed towards the end of the month, or sooner if the weather prove wet. As protection from excessive wet, or strong winds, is all that these plants require as yet, they should receive all the air that can be given them, day and night, until the nights begin to get frosty.

Orange trees.—Protect from heavy rains and strong winds, or place them in winter quarters about the end of the month. Water regularly and thoroughly, but not so often as the weather becomes colder.

Oxalis.—Pot such of the early flowering sorts as commence to grow: a mixture of sandy loam and peat suits them well. Many of the Cape species appear to thrive in fine sand. Water sparingly, until they begin to grow vigorously.

Pelargoniums.—Continue to cut down the plants, and shift them into smaller pots as they go out of flower. Shift those already started, using a richer compost as the plants acquire size. Regulate the heads by stopping and tying out as they advance. Do not stop such as are wanted for winter and spring flowering after the middle of the month; but, to maintain a due supply, a few should be allowed to grow away at intervals of about a fortnight, and a little liquid manure should be given them occasionally.

Primulas.—Continue to shift as requisite, keeping them close for a few days afterwards, and giving little water at first: pick off the flowers from such plants as are wanted to attain a large size to bloom in winter and spring. Use liquid manure occasionally.

Proteas, Banksias, Dryandras, &c. should be housed before the roots become soddened by rain, giving them a cool airy situation, and placing them so as not to be crowded together.

Rhododendrons.—Protect the tender varieties from heavy rains and strong winds: keep them regularly moist, but not wet, at the root.

Roses.—Prune and regulate any that are planted out to pillars or otherwise in the house, thinning the least promising shoots. Reduce the supply of water to any that have completed their growth.

Salvias.—Give a final shift, and stake and tie out the plants to the desired form. Use a rich compost, and manure-water occasionally. Those in flower should be shaded during the hottest part of the day.

Stapelias.—Place these in a hot dry place, fully exposed to light; water regularly, but not copiously. Several of them will be in flower by the end of the month. When past flowering, the supply of moisture should be gradually diminished.

Tropæolums.—Pot any which may show signs of growth, but do not excite any that are at rest. Use a sandy fibrous loam, and leaf mould. Water sparingly at first.

THE CONSERVATORY.

Temperature from 60 to 70 degrees by day, and from 45 to 50 degrees by night.

Ventilation.—Give air copiously in fine weather, but close the house early in the afternoon as the evenings get cool.

Watering.—Apply water with great care as the weather gets colder, using it in smaller quantities to nearly all plants, and almost entirely withholding it from succulents. Syringe only in the morning.

Arrangement.—As many large plants which have been out of doors during the summer will now require to be housed, attention should be paid so to group and arrange them as to harmonize in the best way, and to admit of the smaller and flowering plants to be placed round and among them to the greatest advantage. By this means the smaller ones may be shifted and re-arranged as often as necessary, to produce variety, while the tall and heavy ones will seldom want to be moved, except when a complete change of arrangement may be desirable.

General Directions.—Let all plants as they are introduced be carefully examined, cleaned, surfaced, staked, and re-labelled where necessary, before they are established in their winter quarters. Let all necessary repairs of the house be done before the large plants are brought in.

THE PLANT STOVE.

Temperature, from 75 to 80 degrees by day, and 60 to 65 degrees by night.

Ventilation.—Gradually lessen the amount of air admitted to the house, and shut it up early in the afternoon. Shading should also be gradually dispensed with.

Watering.—Restrict the amount of water, especially to plants in a state of rest. Syringe most copiously in the morning, gradually lessening the amount of moisture as the days shorten, and whenever the weather becomes cool and cloudy.

Potting.—Continue to shift such plants as require more room, and also to pot any bulbs or other roots which may be commencing their growth.

Insects.—Carefully examine the plants, and destroy or disturb any insects infesting them. Plants in a state of rest are more easily examined and cleaned than when growing, especially as the insects are then generally not in so active a state as at other periods.

Achimenes.—Late plants should be shifted and grown away for winter decoration. Those dying down should be gradually dried off, and put away in a dry cool place till spring.

Allamanda, Beaumontia, Echites, and all strong growing climbers, should be allowed to rest if their growth is completed. Keep them properly tied up.

Alpinias, Hedychiums, and other reedy plants, as they flower and attain their full development, should be well supplied with water, but it should be gradually lessened to such as have flowered.

Aphelandras, Justicias, Ruellias, &c. should be encouraged where large plants are wanted, but to others the supply of water should be limited.

Amaryllids.—Pot any showing signs of growth, but prevent their doing so as much as possible, by ripening and keeping them in a hot dry state after the leaves decay.

Begonias.—The spring flowering sorts should be potted, and gradually excited. Water very little until they are growing freely, and even then beware of giving too much, as they soon suffer from an over supply.

Burchellias.—Allow the plants to rest as they complete their growth.

Cacti.—Keep these dry and cool, exposed to the air, but protected from rough weather.

Cinnamomum (Cinnamon tree).—Water carefully, reducing the quantity when the growth is set.

Clerodendrons.—Keep those out of bloom cool, reducing the supply of moisture, to enable them to ripen their wood.

Climbers.—Tie up and regulate such as continue to grow, and water regularly.

Daturas.—Throw some plants into a state of rest by gradually withholding water: by doing this at intervals they may be bloomed in succession.

Erythrinas may be treated in a similar way to the last: any that are growing freely will require a liberal supply of water.

Euphorbias.—Gradually reduce the water to the succulent sorts, and let them have a light airy situation.

Ferns.—Keep these damp, but reduce the supply of moisture as the weather becomes cool and cloudy.

Gardenias.—Rest these as they complete their growth, especially such as are wanted for early flowering.

Gesneras, Gloxinias, &c.—Pot and excite the winter flowering sorts, and dry off the others as they go out of flower.

Hippeastrums, Crinums, Pancratiums, &c. —Water sparingly as they appear to want to rest, but always supply enough to keep the leaves from flagging.

Ipomæas.—Such as are in flower will require abundance of water, both to the root and over the foliage. Cut in such as are getting shabby, or rambling too much.

Ixoras.—Keep them cool as soon as they have made their growth; and limit the supply of moisture.

Jasminums, Rondeletias, Brunfelsias, also keep cool and airy. In winter and spring they may be flowered at intervals by introducing them at different times to more heat and moisture.

Lantanas may be treated in a similar way to the last. Pot off cuttings, and get them established before winter.

Luculia gratissima.—Encourage while in a growing state, but gradually rest it afterwards by withholding water, and keeping it cool.

Lycopodiums.—Keep them not quite so damp as formerly, and in a rather more airy place as cold or cloudy weather comes on.

Malvaceous plants, as hibiscus, will require liberal supplies of water while in flower: guard carefully against insects.

Manettias, and other tender climbers, should be regularly trained, and the supply of water at the roots diminished towards the end of the month.

Melastomas.—Supply freely with water while in flower, afterwards the quantity may be diminished: put in cuttings of desirable sorts.

Melo-Cacti.—Reduce the amount of water, and place them in a dry, light and airy situation, and where they will be rather cool.

Musas, if showing signs of flowering, should be encouraged to set the fruit before the fine weather is gone. Apply manure water occasionally.

Nepenthes (Pitcher plant).—Less water, especially at the roots, should be given, as the season advances; keep the plants always in the warmest part of the house.

Neriums may be struck from cuttings, which they do very readily in water as well as in moist sandy earth. Keep the old plants cool and rather dry.

Nymphæas (Water Lilies).—As the leaves show symptoms of decay, the plants should be gradually laid dry, or nearly so, and placed in a cooler situation for a month or two.

Palms.—Apply water abundantly to those in a growing state; but reduce it to the others. Keep the foliage clean.

Thunbergias.—Those in flower should be plentifully supplied with moisture, and often syringed; keep them neatly trained as they advance in growth.

Vincas.—Plants previously at rest may be potted and excited into fresh growth; they will soon flower. Guard against red spider. Begin to rest such as have been growing up to the present time.

THE ORCHID HOUSE.

Temperature.—The warm house for the Indian species, 85 degrees by day, 70 degrees at night; the cool, or Mexican house, 75 degrees by day, 60 degrees at night.

Ventilation.—Give air cautiously, but rather freely among such plants as are in a state of rest; close the house early, and maintain a proper temperature by increasing the artificial heat by means of fires.

Watering.—Moisture must be applied with great caution, and in much smaller quantities than when the plants were growing. Syringe and damp the flowers chiefly in the morning, but sparingly or not at all in dull weather.

Insects must be allowed no breathing time; while the plants are in a state of rest, they can be closely watched for any depredators lurking about them. Few of their enemies like the drying process to which most of the plants will be now subjected.

Potting.—Renew blocks where necessary to such plants whose roots have done growing, taking care to disturb or break them as little as possible. Most of the others will be better left until the period at which they recommence their growth.

Shading.—This may be entirely removed from the plants at perfect rest, except in very bright sunshine, but continue a slight shade over any in a growing state.

Soils.—Take every opportunity to keep up the necessary supply of the various articles requisite in this department. Where necessary for suspending, or for baskets, always use copper wire and nails; iron soon rusts and decays in the damp and heat of this house.

Imported plants.—As soon as they show good symptoms of life, grow them away in order to make use of all the sun-heat left. Be very careful in the application of water, even after they are growing freely.

Aërides, Saccolabium, and Vanda.—Continue to supply these freely with water, and keep them in the hottest and dampest part of the house.

Cattleya.—Grow these away,' supplying them freely with water as they advance in growth, but using it very carefully in gloomy weather.

Cymbidiums.—Water freely as long as they continue to grow, and afterwards remove them to a cooler situation, and reduce the allowance of moisture.

Dendrobiums.—As soon as done growing, rest these thoroughly by withholding moisture to a great extent, and exposing them to bright sun-light, except in the hottest period of the day.

Oncidiums.—As they arrive near their full growth the supply of water should be gradually reduced, and when the growth is completed they should be removed to a cool house, and no more moisture applied than merely to keep the plants from shrivelling.

Stanhopeas.—Water freely while growing, and keep the plants in an airy place. Reduce the allowance of water gradually, as they complete their growth, and remove them to a cooler house, where they may enjoy their period of repose.

THE ESCULENT FUNGUSES OF ENGLAND.[*]

WE believe there are very few persons but will acknowledge the hand of Providence in our late visitation, and hence must admit that, without His blessing on our labours, all attempts to provide a substitute or remedy for the failure of the potato crops will avail us nothing. The Almighty fiat, however, is not that we should remain idle; but rather that we should use every means at our command to mitigate the scarcity with which, for some good and wise purpose, we have been so lately afflicted.

To abandon, or even neglect, so invaluable a crop as the potato, simply because for the last two or three years they have in many parts of the country partially failed, would be next to madness; for most certainly no adequate substitute for that vegetable is known, nor has any of the articles so recommended (by the many advisers upon the subject) the slightest pretensions to equality as an article of food. We cannot, therefore, urge too strongly upon every farmer, gardener, and private gentleman, the necessity and the importance of cultivating, year after year, with especial care and perseverance, a good breadth of potato, notwithstanding all the discouragements with which it may be attended; at the same time, however, we would have no one unmindful of any description of vegetable calculated to be useful as an article of food; and, therefore, we hail with pleasure every attempt to render available, as sustenance, subjects that hitherto have been neglected or overlooked.

The Esculent Fungi may be mentioned as of that class, for, most assuredly, they have hitherto been unheeded in this country, although furnishing food to a very considerable extent in various parts of the continent. The volume before us comes very opportunely; and upon this matter we will let the author speak for himself:—

"No country is perhaps richer in esculent funguses than our own; we have upwards of thirty species abounding in our woods. No markets might, therefore, be better supplied than the English, and yet England is the only country in Europe where this important and savoury food is, from ignorance or prejudice, left to perish ungathered. In France, Germany, and Italy, funguses not only constitute for weeks together the sole diet of thousands, but the residue, either fresh, dried, or variously preserved, in oil, vinegar, or brine, is sold by the poor, and forms a valuable source of income to many who have no other produce to bring into the market. Well then may we style them with Mons. Roques, '*the manna of the poor!*'"—*Introd.* p. vii.

In Italy these things are better managed. In the markets of Rome many thousand pounds weight are annually disposed of; and an income of many thousand pounds sterling is thus derived.

"The following brief summary was drawn up by Professor Sanguinetti, the Official Inspector (Ispettore dei Funghi) at Rome: let it speak for itself:—'For forty days during the autumn, and for about half that period every spring, large quantities of funguses, picked in the immediate vicinity of Rome, from Frascati, Rocca di Papa, Albano, beyond Monte Mario, towards Ostia and the neighbourhood of the sites of Veii and Gabii, are brought in at the different gates. In the year 1837 the Government instituted the so-called Congregazione Speciale di Sanità, which among other duties was more particularly required to take into serious consideration the commerce of funguses, from the unrestricted sale of which during some years past, cases of poisoning had not unfrequently occurred. The following decisions were arrived at by this body:—

"'1st.—That for the future an "Inspector of Funguses," versed in botany, should be appointed to attend the market in place of the peasant, whose supposed practical knowledge had hitherto been held as sufficient guarantee for the public safety.

"'2d.—That all the Funguses brought into Rome by the different gates should be registered, under the surveillance of the principal Officer, in whose presence also the baskets were to be sealed up, and the whole for that day's consumption sent under escort to a central depôt.

"'3d.—That a certain spot should be fixed upon for the Fungus market, and that nobody under penalty of fine and imprisonment should hawk them about the streets.

"'4th.—That at seven o'clock, A.M., precisely, the Inspector should pay his daily visit, and examine the whole, the contents of the baskets being previously emptied on the ground by the proprietors, who were then to receive, if the Funguses were approved of, a printed permission of sale from the police, and to pay for it an impost of one baioccho (a halfpenny) on every ten pounds.

"'5th.—That quantities under ten pounds should not be taxed.

"'6th.—That the stale Funguses of the preceding day, as well as those that were mouldy, bruised, filled with maggots, or dangerous (*muffi, guasti, verminosi, velenosi*), together with any specimen of the common mushroom (*Agaricus campestris*) detected in any of the baskets, should be sent under escort and thrown into the Tiber.

"'7th.—That the Inspector should be empowered to fine or imprison all those refractory to the above regulations; and, finally, that he should furnish a weekly report to the Tribunal of Provisions (*Il Tribunale delle Grascie*) of the proceeds of the sale.'

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[*] A Treatise on the Esculent Funguses of England, containing an Account of their Classical History, Uses, Characters, Development, Structure, Nutritious Properties, Modes of Cooking and Preserving, &c., by Charles David Badham, M.D. London: Reeve, Brothers, King William-street, Strand, 1847.

"As all fresh funguses for sale in quantities *exceeding* ten pounds are weighed, in order to be taxed, we are enabled to arrive at an exact estimate of the number of pounds thus disposed of. The return of *taxed* Mushrooms in the city of Rome during the last ten years, gives a yearly average of between *sixty and eighty thousand pounds* weight; and if we double this amount, as we may safely do, in order to include such smaller *untaxed* supplies as are disposed of in bribes, fees, and presents, and reckon the whole at the rate of six baiocchi, or three pence per lb. (a fair average), this will make the commercial value of fresh funguses very apparent, showing it here to be little less than 2,000*l.* a year. But the fresh funguses form only a small part of the whole consumption, to which must be added the dried, the pickled, and the preserved; which sell at a much higher price than the first.* Supposing, however, that with these additions the supply of all kinds only reached a sum the double of that given above, even this would furnish us with an annual average of nearly *four thousand pounds sterling*; and this in a single city, and that, too, by no means the most populous one in Italy! What then must be the net receipts of all the market-places of all the Italian States? For as in these the proportion of the price of esculent funguses to butchers' meat is as two to three, it is plain, that prejudice has deprived the poor of this country, not only of many thousand pounds of the former, but also of as much of the latter as might have been purchased by exchange, and of the countless sums which might have been earned in gathering them."—*Introd.* pp. vii.—x.

There is no country where fungi do not abound, and probably there is in none a lack of esculent species. The Russians are somewhat famed for the number of Fungi which they employ as food—about fifty kinds. In some parts of Russia the peasantry are said to depend on mushrooms and bread for the greater part of their sustenance. Our author's foreign experience seems to be chiefly Italian; he tells us:—

"Italy is not the country for the English florist; he will find twenty times as many petals at home. Trim parterres are not inventions of the south; summer houses would be no luxuries in a climate that never knows winter; the only conservatories that flourish there are not for flowers, but for music. In few northern regions is the Goddess of Flowers worse off for a bouquet than at Rome or Naples; regarded merely as the herald of spring, and not appreciated for her own sake, as soon as she has waved her wand over the land and covered it with the March blossoms of Crocuses, Cyclamens, and Anemones, her reign is over. All scents are held in equal abhorrence save those of frankincense and garlic, for which there seems to be a prescriptive toleration; but every other odour, fetid or fragrant, musk or mignonette, is equally proscribed, and an Italian Signora would as soon permit a Locusta to cook for her, as a violet to scent her boudoir. To pick wild flowers is as dangerous as it is difficult to find cultivated ones; a *coup de soleil* or a fever is easily procured by imprudent exposure before sunset, while the interval between that and night is too brief to be employed for the purpose; but when the season for flowers is long passed, and autumn with her fruits is come round again, when the stranger can wander forth where he lists without an umbrella, he will be able to luxuriate amidst the lonely scenery, and to delight himself in the natural history of the district; the season of the periodical rains has ceased; the repose of the forest is no longer troubled by the power of the waters; the mountain pines borne for miles down into the valleys are stranded on the broad shingly bed of the exhausted torrent; broken bridges are safely repaired; the maize is receiving the last mellowing touches as it festoons the cottage fronts, the prickly chestnut pods are beginning to gape and the brown chestnuts to leap out shining from their envelopes; the last reluctant olive has been beaten from the bough; the vintage has nearly ceased to bleed, night fires* already begin to flicker on the mountains, and the hemp stubble is daily crackling on the plain; this is indeed the time for enjoying Italy; nature has revived again, and with nature, man. The feverish torpor, I had almost ventured to call it the summer hybernation, has ceased with September, and autumn has come round with the vivifying influence of a new spring; then if we go abroad to wander, whether our walk be across plains or through upland woods, we shall not stroll a mile without stopping a hundred times to admire what is to many of us a nearly new class of objects which have sprung up suddenly and now beset our path on every side. These are the fungus tribe, which are as beautiful as the fairest flowers, and more useful than most fruits; and now that butchers' meat is bad, that the beans have become stringy, and the potatoes are hydrated by the rain, they appear thus opportunely to eke out the scantiness of autumnal larders in the south, and give a fresh zest to the daily repast. Well may their sudden apparition surprise us, for not ten days since the waters were all out, and only three or four nights back peals of thunder rattled against the casements and kept the most determined sleepers in awful vigil; and now, behold the meadows by natural magic studded with countless fairy rings of every diameter, formed of such species as grow upon the ground, while the chestnut and the oak are teeming with a new class of fruits that had no previous blossoming, many of which have already attained their full growth. We recollect with gratitude the objects of a pursuit, which has accidentally brought us to such an acquaintance with the diversities of Italian scenery, as we never should have experienced without it. In fishing it is not the fish we catch which alone repays us for our toil; it is the wandering as the rivulet wanders, 'at its own sweet will,' the exercise and the appetite consequent upon it, the prize in natural history, the reciting aloud, or reflecting as we walk, and when it is pleasantly warm the 'molles sub arbore somni,' which console us for the lack of sport; on the same principle mushroom-hunting may be recommended to the young naturalist, not only for the beauty of the objects which he is sure to come upon (if he do but hunt at the right season), but also because in that most beautiful of months, whether at home or abroad, it brings the wanderer out of beaten paths to fall in with many striking views which he would not otherwise have explored. The extremely limited time during which funguses are to be found, their fragility, their infinite diversity, their ephemeral existence, these, too, add to the interest of an autumnal walk in quest of them. At Lucca, leaving idleness and indigestion in bed, just as the sun was beginning to shoot his first rays on the white convents, and the spires of the village churches on the mountains, making morning above, while the deep valley beneath was still in twilight, it was pleasant to pass the little opening coffee-house with its two or three candidates for early breakfast, and crossing the noiseless trout stream over the little bridge, to enter one of those old chestnut forests and begin clambering up the laddery pathway, to reach the summit just as he poured his full effulgence on the magnificent rival views of the Lucchese and Modenese territories; pleasant too was it on the road Rome-ward, pausing a few days to enjoy the exquisite scenery about Spoleto, to climb the steep streets to the cathedral, and thence passing the giddy viaduct several hundred feet above the white ravine, which it traverses, to issue upon those Nurcian Hills then fragrant with the breath of morning, 'le beau matin qui sort humide et pâle,' and with the scent of sweet herbs; but above all other hills renowned for the fragrance of those ever reproductive mines of coal-black, subterranean truffles! It is a pleasant remembrance to have plucked the crimson Amanite that ministered to a Cæsar's decease in the very neighbourhood of the Palatine Hill; to have collected mushrooms amidst the meadows of Horace's farm, where he tells us they grew best, and to have watched along the moist pastures of the Cremara a stand of the stately *Agaricus procerus* nodding upon their stalks; or standing on the heights above Sorrento, just as the setting sun flashed upon the waters of the bay ere they engulphed him, and left us to his sister and the evening star, to have come upon that wonderful *Polyporus tuberaster*, whose matrix is the hard stone, from which it derives strength and luxuriance as if from a soft and genial soil.

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* "At from twenty to thirty baiocchi, *i. e.* at about 1*s.* 3*d.* a pound."

* "Night fires; this is to clear the ground under the Chestnut trees for the falling fruits, which might otherwise be lost amidst the heath, but the practice is unsafe; as many a tree has been charred by the flames, and some have actually taken fire and given rise to a general conflagration."

"But not only in Italy, in our own country also, the collector in Mycology will have to traverse much beautiful and diversified scenery; amid woods, greenswards, winding lanes, rich meadows, healthy commons, open downs, the nodding hop-grove, and the mountain sheep-path; and all shone upon by an autumnal sunset, as compared with southern climes 'obscurely bright,' and unpreceded by that beautiful rosy tint which bathes the whole landscape in Italy, but with a far finer back ground of clouds to reflect its departed glories; and throughout all this range of scenery he will never hunt in vain; indulgent gamekeepers made aware of what he is poaching may warn him that he is not collecting mushrooms, but will never warn him off from the best kept preserves. In such rambles he will see, what I have this autumn myself witnessed, whole *hundred weights of rich wholesome diet rotting under trees; woods teeming with food and not one hand to gather it;* and this perhaps in the midst of potato blight, poverty and all manner of privations, and public prayers against imminent famine. I have indeed grieved when I reflected on the straitened condition of the lower orders this year, to see pounds innumerable of extempore beef-steaks growing on our oaks in the shape of *Fistulina hepatica; Agaricus fusipes*, to pickle, in clusters under them; *Puff-balls*, which some of our friends have not inaptly compared to sweetbread for the rich delicacy of their unassisted flavour; *Hydna*, as good as oysters, which they somewhat resemble in taste; *Agaricus deliciosus*, reminding us of tender lamb-kidneys; the beautiful yellow Chantarelle, that *kalon kagothon* of diet, growing by the bushel, and no basket but our own to pick up a few specimens in our way; the sweet nutty-flavoured *Boletus*, in vain calling himself *edulis* where there was none to believe him; the dainty *Orcella;* the *Agaricus heterophyllus*, which tastes like the craw-fish when grilled; the *Agaricus ruber* and *Agaricus virescens*, to cook in any way, and equally good in all;—these were among the most conspicuous of the trouvailles; but that the reader may know all he is likely to find in one single autumn let him glance at the catalogue below.[*] He may at first alarm his friends' cooks, but their fears will, I promise him, soon be appeased, after one or two trials of this new class of viands, and he will not long pass either for a conjuror, or something worse, in giving directions to stew *toadstools;* as soon as he is initiated in this class of dainties he will, I am persuaded, lose no time in making the discovery known to the poor of the neighbourhood; while in so doing he will render an important service to the country at large, by instructing the indigent and ignorant in the choice of an ample, wholesome, and excellent article, which they may convert into money, or consume at their own tables, when properly prepared, throughout the winter."—Pp. 133—137.

After treating on the range of fungus growths, of their general forms, colours, textures, odours, and tastes, the expansive power of their growth, their reproductive power, motion, phosphorescence, dimensions, chemical composition, uses, and development, Dr. Badham goes on to describe the following as wholesome species:—

Agaricus prunulus, Ag. procerus, Boletus edulis, Ag. campestris, Ag. exquisitus, Ag. deliciosus, Boletus scaber, Ag. personatus, Ag. Oreades, Ag. nebularis, Cantharellus cibarius, Ag. atramentarius, Ag. comatus, Ag. heterophyllus, Ag. ruber, Ag. virescens, Ag. ostreatus, Ag. rubescens, Morchellia esculenta, Hydnum repandum, Fistulina hepatica, Ag. orcella, Helvella crispa, H. lacunosa, Verpa digitaliformis, Peziza acetabulum, Polyporus tuberaster, P. frondrosus, Clavaria coralloides, Lycoperdon plumbeum, L. bovista, Ag. melleus (nauseous), *Ag. ulmarius, Ag. fusifes, Ag. vaginatus, Ag. violaceus, Ag. castaneus, Ag. piperatus, Ag. virgineus*; of these the *Agaricus campestris* (common Mushroom) and *Morchellia esculenta* (Morel) are the only ones in common use.

Regarding fungi as an article of diet, and the modes of distinguishing the wholesome from the poisonous species, we find the following remarks:—

"That the mushroom is not quite so wholesome when cultivated, as it is in the meadow in a state of nature, cannot be doubted;[*] and that many persons have suffered both in France and England, more or less, gastric disturbance after eating those taken from hotbeds, or from dark foul unaërated places, is certain; that mushrooms also in decay, when chemistry has laid hold of their tissues and changed their juices, have produced disagreeable sensations in the stomach and bowels, is not to be questioned; finally, that the idiosyncracy of some persons is opposed to this diet, as that of others is to shell-fish, to melons, cucumbers, and the like, must also be ceded; but none of these admissions surely meddle with the question, nor go any way towards proving the assumed fact, viz:—that a mushroom ever changes its nature and becomes poisonous like the toadstool.[†] It has been unwarily asserted, that because the people of the north are in the habit of employing in their kitchen the *Agaricus muscarius*, which is known to be poisonous in the south, that this points to some remarkable difference in the plant, depending on difference of locality. It is to be recollected, however, that this very same fungus if taken, in sufficient quantity, without the precaution usually adopted of soaking it in vinegar before cooking, *has* produced fatal accidents, of which we read the recitals in various mycological works; and only not more frequently, because the plant being generally well steeped in brine or acetic acid, is in most cases robbed of deleterious principles, the only residue left being pure fungine, which is equally innoxious, and the same in all funguses whatever. It is, moreover, worthy of remark, that though the common mushroom (*Agaricus campestris*) varies considerably, both as to flavour and wholesomeness (circumstances attributable in part to the varieties of soil in which it flourishes;*) other funguses, on the contrary, being mostly restricted for their alimentation and re-production to some one particular *habitat*, do not present such differences. The *Boletus edulis*, the *Fistulina hepatica*, the *Agaricus Oreades*, the *Agaricus procerus*, the *Agaricus prunulus*, the *Agaricus fusipes*, the *Cantharellus cibarius*, &c., are in flavour, and other sensible qualities, just the same in England as they are in France, Switzerland, or Italy. Thus the objection to eat funguses on the ground of their presenting differences depending on those of the locality where they grow, applies principally, if it apply at all, to the English mushroom, of which no housekeeper is afraid, and by no means to those species, the introduction of which into our markets and kitchens forms the main object of this treatise.

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[*] "The whole of the species mentioned in the annexed list were met with by the author this summer and autumn, (1846,) and partaken of by himself and friends, viz:—*Amanita vaginata; Ag. rubescens, procerus, prunulus, ruber, heterophyllus, virescens, deliciosus, nebularis, personatus, virgineus, fusipes, Oreades, ostreatus, orcella, campestris,* (and its varieties *edulis* and *pratensis*), *exquisitus, comatus,* and *ulmarius; Cantharellus cibarius; Polyporus frondosus; Boletus edulis* and *scaber; Fistulina hepatica; Hydnum repandum; Helvella lacunosa; Peziza acetabulum* and *Bovista plumbea; Lycoperdon gemmatum* and *Clavaria strigosa.*"

[*] "Locality has a great effect upon almost all that we eat: our very mutton varies in different counties; compare the town-bred gutter-fed poultry of London, with that of twenty miles around; fish vary, the tench out of different ponds are different; fruits vary with the soil; are potatoes everywhere the same?"

[†] "Persons have fancied themselves poisoned when they were not; indigestion produced by mushrooms is looked upon with fear and suspicion, and if a medical man be called in, the stomach-pump used, and relief obtained by its rejection, nothing will persuade either patient or practitioner that this has not been a case of poisoning. 'You have saved my life,' says the one. 'I think you will not be persuaded to eat any more mushrooms for some time,' says the other: and so they part; each under the impression that he knows more about mushrooms than any body else can tell him."

"Besides the foregoing objections to funguses on the general ground of their supposed indigestibility, or else the more particular one of their not being at all times and in all places the same, a further and weightier one, as it is commonly urged, is the alleged impossibility of our being able to discriminate with certainty the good from the bad; an objection which derives much of its supposed weight from the apparently clashing testimonies of authors respecting the same species, who not unfrequently describe, under a *common* name, a fungus which some of them assert to be esculent, some doubtful, and others, altogether poisonous in its qualities. Such discrepancies, however, have already in many cases been satisfactorily adjusted, whilst a more minute attention and corresponding improvement in the pictorial representation of species is daily diminishing the errors of the older mycologists. Admitting then, what there is no gainsaying, the existence of many dangerous individuals in this family,† ought we not in a matter of such importance rather to apply ourselves to the task of discriminating them accurately, than permit idle rumours of its impracticability, or even its real difficulty to dehort us from the undertaking? Assuredly nature, who has given to brutes an instinct, by which to select their aliment, has not left man without a discriminative power to do the same, with equal certainty; nor does he use his privileges to their full, or employ his senses as he might, when he suffers himself to be surpassed by brute animals, in their diagnosis of food.

"The first thing to know about funguses is, that in the *immense majority of cases*, they are harmless; the innoxious and esculent kinds are the *rule*, the poisonous the *exceptions* to it; in a general way, it is more easy to say what we should not eat, than what we may; we should never eat any that smell sickly or poisonous. Opinions respecting the agreeableness or disagreeableness of an odour, as of a taste, may differ; thus, in France and Italy (where the palate seems to us to bribe the judgment of the nose), it is usual to speak of that of the *Agaricus prunulus* as 'perfuming the air;' but though the strong peculiar smell exhaled by this and some other esculent funguses, be anything but a perfume, as we apprehend the term, it is very different from that intolerable fœtor, that nauseous overwhelming odour given out by the *Phallus impudicus*, the *Clathrus cancellatus*, the *Amanita verna*, and its varieties. There are some, indeed, which, yielding no smell, will poison notwithstanding; but then there are none to lure us into a false security by a deceitful fragrance. The same negative indications are furnished by the palate as by the nose; those that are bitter, or styptic, or that burn the fauces on mastication, or that parch the throat when they have been swallowed, should be put aside; those that yield spiced milk, of whatever colour, should be held, notwithstanding exceptions, in suspicion, as an unsafe dairy to deal with. The 'Lucchese Goat' (*Agaricus piperatus*), and the 'Cow of the Vosges' (*Agaricus lactifluus aureus*), though in high request in their respective localities, and really delicate themselves, are akin to others whose milks, though they may have the colour of gold, have the qualities of gamboge. Paulet was once so indiscreet as to eat a slice of the Griper (*Agaricus torminosus*), which belongs to this genus, and afterwards still more indiscreet in giving it the inviting name of '*Mouton zoné*;' it is well, however, that the reader should be apprized, as he will frequently come across this '*Mouton*' in his walks, that it is a perfect wolf in sheep's clothing, nor less to be avoided than one nearly allied to it, which rejoices in the name of *Necator*, or the Slayer. Here, as it is a safe rule, rather to condemn many that may be innocent, than to admit one that is at all suspicious to our confidence, we should, till intimacy has made us familiar with the exceptions, avoid all those the flesh of which is livid, or that, Chameleon-like, assume a variety of hues on being broken or bruised.[*] The external colour furnishes no certain information, with the single exception of that of the gills in one or two Agarics, by which to know the good from the bad; thus the *Boule de neige*, and the *Vernal amanite*, are both white, but the dress, in one case, is of innocence, in the other of mere hypocrisy; again, the green, which we are so cautioned to avoid in this class of plants as cholorotic and unhealthy, and which is of such bad augury in *Amanita viridis*, is quite the contrary in the *Verdette (A. virescens)*. So that to be led only by colour would certainly be to be misled, a mistake which, in the family of the *Russulæ*, might readily compromise life.

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* "It grows not only throughout Europe, but in India also."

† "We should apply the same rules of discrimination here as elsewhere; have we not picked potatoes for our table out of the deadly family of *Solana*? selected with care the *garden* from the *fool's* parsley? and do we not pickle gherkins, notwithstanding their affinity to the *Elaterium momordicum*, which would poison us if we were to eat it?"

"Some mycologists recommend, with certain exceptions, the avoidance of such Agarics as have lateral stalks, of such as are pectinate (*i. e.* have equal gills like a comb), of such as have little flesh in proportion to the depth of their gills, and generally of all those that are past their prime. Some warn us not to eat after the snail, as we are in the habit of doing in our gardens after the wasp; we may trust it seems to him to point out the best greengages, but not to the slug to select our mushrooms for us. Finally, it has been very currently affirmed, though I think without sufficient warrant, that all such funguses as run rapidly into deliquescence ought to be avoided as dangerous. Here, while it might be unsafe to lay down any positive rule beyond one's own experience, this, so far as it goes, would rather lead me to a different inference; and even the reader will ask, 'Does not the mushroom deliquesce, and is not ketchup, that *poignant liquor made from boiled mushrooms mixed with salt* to which we are all so partial, this very deliquescence?' but, besides this, the *Agaricus comatus*, which is highly deliquescent, is largely eaten about Lucca, the *Agaricus atramentarius* also is, on our own authority, as good for ketchup as for that purpose to which its juices are more commonly put, viz:—for making ink; thus amongst deliquescent Agarics, there are some the juices of which are both safe and savoury, perhaps of more than those here recorded, but as I have not hitherto myself made trial of any others, and as there are some dangerous species mixed up with this group, the public cannot be too much cautioned against making any rash experiment, where the consequences of a mistake might be so serious.

"Some trees give origin by preference to good, others to deleterious species; thus, the hazel-nut, the black and perhaps the white poplar, together with the fig-tree, grow only good sorts; whereas the olive has been famous since the days of Nicander for none but poisonous species. The elm, the alder, the larch, the beech, and some other trees, seem capable of supporting both good and bad species at their roots, hence it is not safe to trust implicitly to the *tree* to determine the wholesomeness or unwholesomeness of the fungus that grows out of it, or in its neighbourhood. The presence of a *free acid* is by no means conclusive either way, there being many species of both good and bad which will indifferently turn litmus paper red. The old and very general practice adopted by cooks of *dressing funguses with a silver spoon*, (which is supposed to become tarnished, then, only when their juices are of a deleterious quality,) is an error which cannot be too generally known and exposed, as many lives, especially on the Continent, have been and still are sacrificed to it annually. In some cases, the kitchen fire will extract the deleterious property from funguses, which it would have been unsafe to eat raw—and frequently the acrid lactescent kinds change their nature entirely and become mild by cooking; in other cases, the virus is drawn out by saturating the fungus, some time before dressing it, either in vinegar or brine,[*] the liquid then containing the poison which was originally in the plant; but in other species, as in *Ag. emeticus*, it would seem from the experiments of M. Krapf, of Vienna, upon living animals, that it is to be extracted neither by ebullition nor desiccation."[†]—Pp. 32—38.

The expansive power of the growth of fungi is very great, and will appear more especially so if we take into consideration the softness and succulency of their texture; in fact, in the work of disintegration, the fungi must bear an important part.

"Soft and yielding as vegetable structures appear to the touch, the expansive force of their growth is almost beyond calculation; the effects of this power, of which the experience of every one will furnish him with some instances, are, perhaps, nowhere more strikingly exemplified than amidst the ruins of its own creation. Coeval with many old brick fabrics of earlier times, perhaps imbedded in the very mortar which holds them together, it may lurk there for centuries in quiescence, till once arousing its energies, it continues to exert them in ceaseless activity ever after. It has at Rome planted its pink Valerians on her highest towers, and its wild fig-tree in the breaches of her walls; nor are the granite obelisks of her piazzas, nor the classic groups in marble on her Quirinal mount, entirely exempt from its encroachments; a conspiracy of plants, *one hundred strong*, have long ago planned the destruction of the Colosseum; their undermining process advances each year, and neither iron nor new brick-work can arrest it long; that old Roman cement, which the Barbarians gave up as impracticable, and the pick-axe of the Barberini had but begun to disintegrate, will, ere the lapse of another century, be effectually pulled to pieces by the rending arm of vegetation. Here, as erst in Juvenal's time, the *Mala ficus* finds no walls too strong to rive asunder; no tower beyond the reach of its scaling; no monument too sacred for it to touch. In the class of plants immediately under consideration, while the expansive effort of growth is equal to what it is in other cases, its effects are far more startling from their suddenness. Mons. Bulliard (to cite one or two instances out of a great many) relates, that on placing a *Phallus impudicus* within a glass vessel, the plant expanded so rapidly, as to shiver its sides with an explosive detonation, as loud as that of a pistol. Dr. Carpenter, in his *Elements of Physiology*, mentions that, 'in the neighbourhood of Basingstoke, a paving-stone, measuring twenty-one inches square, and weighing eighty-three pounds, was completely raised an inch and a half out of its bed, by a mass of toadstools, of from six to seven inches in diameter, and that nearly the whole pavement of the town suffered displacement from the same cause.' A friend has seen a crop of puff-balls raise large flag-stones considerably above the plane of their original level; and I have myself recently witnessed an extensive displacement of the pegs of a wooden pavement, which had been driven nine inches into the ground, but were heaved up irregularly, in several places, by small bouquets of Agarics, growing from below.

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[*] "The *converse* of this remark by no means holds true; the *Amanita verna*, the *Am. Phalloides*, the *Ag. semiglobatus*, *Dryophilus*, and *muscarius*, though amongst the most deadly of this class of plants, do not change colour on being cut; the flesh of the first two is moreover of a tempting whiteness, like that of the common puff-ball, than which there is not a safer or a better fungus."

[*] "As was known to the Greeks, 'Prepare your funguses with vinegar, salt, or honey, for thus you will rob them of their poison:—*ὅυτω γὰρ ἀυτῶν τὸ πνιγνῶδες ἀφαιρεῖται*.'"

[†] "Vittadini, however, ate largely of this fungus, which he describes as very disagreeable, though it did not prove poisonous to him."

"Most funguses do not present great anomalies in their size, but retain nearly the same dimensions throughout the whole course of their being; some few species, however, seem to have a faculty of almost indefinite expansion. The usual size of a puff-ball, as we all know, is not much larger than an egg, but some puff-balls attain to the dimensions of the human head, or exceed it. Mr. Berkeley quotes the case of a *Polyporus squamosus*, which in three weeks grew to seven feet five inches in periphery, and weighed thirty-four pounds; also of a *Polyporus fraxineus*, which in a few years measured forty-two inches across. Clusius tells us of a fungus in Pannonia, of such immense size, that after satisfying the cravings of a large mycophilous household, enough of it remained to fill a chariot; this must have been the *Polyporus frondosus*, to which *Polyporus* John Bapt. Porta also alludes, as that called *gallinaceæ*,* by the Neapolitans, which is so big, he says, that you can scarcely make your hands meet round it; he had known it attain twelve pounds weight in a few days.† Bolton, in 1787, found an *Agaricus muscarius*, which, 'after the removal of a considerable portion of its stalk, weighed nearly two pounds;' Withering, an *Agaricus Georgii*, 'which weighed fourteen pounds,' and Mr. Stackhouse another of the same species in Cornwall, 'which was eighteen inches across, and had a stem as thick as a man's wrist;' and I lately picked in the park at Buckhurst, a *Boletus edulis*, which measured twenty-eight inches round its pileus, and eight round the stem, and a few days later a *Boletus pachypus*, the girth of which was thirty-two inches."—Pp. 12—14, 16, 17.

We cannot forbear quoting a forcible passage relating to the now almost universally exploded—and perhaps we might add, impious—doctrine of spontaneous, or, as it is sometimes modified, equivocal generation, in the maintenance of which doctrine, the fungi have often been called in requisition:—

"It would be an insult to the reader's understanding, and a most idle waste of his time, to attempt to confute such self-destroying dogmas as those of 'spontaneous,' or of 'equivocal generation,' which last is only a clumsy equivoque expressive of the same thing; we might just as well talk of the pendulum of a clock generating the time and space in which it librated, as of dead matter spontaneously quickening and actuating those new movements of which some of its particles have become the seat; for how, in the name of common sense, can that which we assume to be dead, *i. e.* emphatically and totally without life, convey such purely vital phenomena as those of intus-susception and growth, which by the very supposition, are no longer within itself. Life, on such an hypothesis as this, ceases to be the opposite and antagonist principle to death, of which it then becomes but a different mode and a new phasis. It is not the incomprehensibility of such a notion (be it well understood) against which the objection lies, for, as life begins and ends in mystery, that would be no objection; it lies in the rashness of attempting to solve an admitted mystery, by placing a palpable absurdity in its room; vainly and irreverently arrogating to itself the honours of a discovery, which we are to believe if we can! At this rate, addled eggs, abandoned by the vital principle, might take to hatching themselves! A more legitimate, and very interesting subject for inquiry is, whether those funguses which are parasitical, (*i. e.* derive their support from the structures whence they emanate,) are so many separate constituents of a superior life *under analysis;* or each, of itself, a new individual? In support of the first view it is urged, that since reproduction in such lower existences is nothing but a modification of nutrition, a new process might well originate from its perversion, and thus give rise to new products; and just as the change in the ordinary nutrition of our bodily organs is prone to give birth to various local disorganizations, or morbid growths; such, it is argued, might be the origin of fungoid growths on trees. But then comes the difficulty: such a view does not, and plainly cannot, explain the development of the *not* parasitical kinds, of which the origin should be the same; no, nor even of all that live by suction at the expense of other plants, since there are as many kinds which quicken in *dead* and decaying structures, as there are that issue out of decrepit and *living* ones; here then it is plain that perverted nutrition can have nothing to do with their production, for in this case nutrition has, by the supposition, ceased; and to talk of disease *after* death would be a strange figure of speech indeed! An elm or oak is frequently dead five, seldom less than three, years before these parasitical growths make their appearance; from which it would appear to follow that seeds are not developed by, but that they must be extraneous to, and independent of, any pathological relation of the plant from which they grow. If then, fungus life be not to be sought for, and cannot with propriety be said to originate in any morbid conditions of the tissues from which they spring, whence do they derive life? in other words, whence in every instance comes that particular seed which, when quickened, is to produce after its kind? Lies this dormant for a season in those dead and decaying tissues, which a little later the plant originating from it is destined to embellish? or is the living germ first brought to them by the winds, and merely deposited on their surface, as in a fitting nidus on which their future development is to be effected? Some writers take one view, some another. Many believe the seeds of funguses to come directly from the earth, and to be drawn up with the sap, which as it penetrates throughout the tissues of the plant, must carry the seeds also along with it; that such is actually sometimes the case is certain, since we can not only plant parasitical blights of a particular kind, so as to infect particular plants, but may also, by digging a trench between those that have already become diseased, and those that are still healthy, stay the progress of the blight; thus clearly establishing, not only the fact of seeds, but also the highly interesting additional one, of their ascent into the structures of plants by intus-susception; and to arrive at a general view from these particular cases, this would seem to be the usual mode of their propagation; neither does it make against this view, nor is it more in favour of the other, which supposes the germs to be derived primarily from the air, and to be thence precipitated on the structures where they grow, that funguses are found on organizations in decay, on withered boughs, and on seared leaves, out of which all sap must of course have been long ago exsiccated; for what then? though the sap does, the seeds do not evaporate with it; these, once absorbed and diffused during the life-time of the plant throughout its whole economy, remain there, in a state of potential activity, ready to burst forth and germinate whenever the necessary conditions for these wonderful changes shall be presented to them, just as though the seeds of corn now flourishing in different parts of England, had first existed for some thousand years as mummy wheat, potentially and unquickened. Nothing perishes in nature: *destructio unius matrix alterius:* life may change titles, but never becomes extinct; so soon as the more perfect plant dies, a host of other vegetable existences, hitherto enthralled by laws of an organization superior to their own, now that the connexion has been dissevered, put forth their separate energies, and severally assert their independence; the poplar may have perished—root, stem, and branch, but its extinction is only the signal for other existences, which had been heretofore bound up and hid within its own, to assert themselves; and accordingly a *Polyporus* sprouts out here; there a *Thelephora* embellishes the dead bark; and here an *Agaric* springs out of the decaying fibres of its head; these in turn also decay, but as they *moulder* away they languish into a new kind of fungous life, of an inferior type to the last, as if their own vitality were inferior in kind to that of the decayed poplar, whence they lately issued.* Thus, since the seeds of funguses actually exist in great quantity in other plants, and since they occur in the closed interior of fruits, and in corollas which are still in their envelopes, (in either case out of the reach of the external air,) since, finally, the *Pietra funghaia*, which produces a Polyporus unknown to England, may be, notwithstanding, made to germinate in England, by furnishing the stone with adequate supplies of water and of heat, *that* seems the more tenable hypothesis of the two, which in every case supposes the *nidus* of the fungus to furnish the seed, and the atmosphere the conditions necessary for its quickening."—Pp. 46, 47.

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* "By this word, however, the vulgar generally understood the *Cantharellus cibarius*."

† "This species, which is somewhat rare in England, occurred in abundance this year in the neighbourhood of Tonbridge Wells. I found four specimens of it on the oak roots in the Grove, one of which rose nearly a foot from the ground, measured considerably more than two and a half feet across, and weighed from eighteen to twenty pounds; the other specimens were of much smaller dimensions."

We have to express our satisfaction at the appearance of this work at the present juncture, and most readily bestow on it a deserved general commendation. We must not, however, be blind to its demerits. First of all, we are totally unable to conceive how, in a work expressly devoted to an account of the esculent funguses of England, the truffle—that daintiest of fungoid dainties—comes to be altogether omitted; yet such is the case; it is neither represented, described, nor catalogued. We must also venture to think, that the style of the work falls exactly into that medium position, which, in botanical matters at least, can never be a "happy" one. The text is, we fear, not botanical enough nor orderly enough to please a botanist, and to render the work acceptable to him; and we imagine it is, to a great extent at least, much too botanical for the general reader. In these days, too, we should have preferred to have seen the plates arranged with more regard to botanical order. The author's estimate of their value, as esculents, which appears now to be the leading feature of arrangement, would have been much better indicated in a tabular form. However, these defects of the work are in a great measure counterbalanced by the beautiful manner in which it is printed on super-royal octavo; and by the beauty and general accuracy of the illustrations. The latter consist of twenty-one plates; sixteen of these are exquisitely coloured, and contain representations of thirty-seven species, and some varieties of fungi, wholesome and deleterious, but chiefly the former; and the remainder are occupied by the details of the structure of these curious and interesting plants.

GARDENERS, AND THE CULTURE OF FLORISTS' FLOWERS.

There is scarcely any branch of gardening so little attended to in large establishments as the cultivation of florists' flowers: and without any disrespect to the many skilful gardeners who must be included in our censure, there is scarcely any point in practice so little understood. Many a gardener who is equal to every department of forcing, and fruit and vegetable growing, is, nevertheless, very deficient in his knowledge of those subjects which have by dint of high culture been drawn out of their natural and simple state into objects of great beauty and delicacy. Such flowers as the tulip, the hyacinth, the picotee, carnation, pink, pansy or heartsease, ranunculus, dahlia, rose, fuchsia, geranium, and some others, have been so improved as to render their original species poor and worthless by comparison. Some of these, which require only the same culture as the most common, may be grown and are grown, as a matter of course, in all establishments. The rose, dahlia, geranium, fuchsia, and hyacinth, are everybody's flowers, and the most beautiful are no more difficult to grow than the most common; but tulips, auriculas, ranunculuses, pinks, picotees, and carnations, require very peculiar treatment; and as not one good gardener in ten knows how to cultivate them, they never try to obtain them. There may be some excuse for this; they occupy a great deal of time, and give a good deal of trouble, and they are not things to trust to other men. Still we recommend all gardeners to be acquainted with them, and to procure a few and manage them according to the published directions, that they may be prepared for growing them when any change renders it necessary. There is good reason to know that the absence of certain qualifications is often fatal when searching for a new place; and though a man may fancy himself in a place for life, changes take place in families when it is least expected; the death of an employer often changes the whole aspect of affairs, and a man is even at a late period of life thrown upon the world unprovided for, except so far as his economy and prudence may have laid up something for a rainy day. The growing taste for florists' flowers renders it very likely that a man may be asked, not "if he can grow them," for he might say, yes, but "if he had been used to them;" and if he were unable to say yes, it might be fatal; and if after saying so the employer found he had not, he would lose confidence, because a man used to florists' flowers can see in an instant whether a man has or has not been used to handling them; for it is, whatever may be said of it, very unlike other gardening. There is more attention wanted, but less labour. It is like setting a tailor to make millinery, to set a regular gardener who is not used to it to grow florists' flowers; but they will become so necessary an appendage to a good establishment that it will be necessary for all gardeners to learn how to grow them; and though he may think he can do it at any time he chooses, he will find himself very awkward, and his subject very troublesome. It is a very common practice with first-rate gardeners to affect to despise florists' flowers. It would be just as sensible to despise an improved peach or pear in behalf of the wild plum. Culture has raised both from their humble and simple nature to subjects worthy of the highest regard. It is only those who cannot grow them, or who are ignorant of the treatment they require, that affect to despise them; and nothing would be more safe than to conclude that a man who speaks of them lightly is ignorant of the treatment they want, and unwilling to own it, as indeed all men are to admit they are at all deficient. We would engage to show that nine gentlemen's head gardeners out of ten would feel at a loss if a bed of tulips, or a collection of auriculas, or carnations and picotees, were placed in their care to be grown for exhibition; and it is sheer nonsense to speak slightingly of them on this account: it will be far better to buy a few and to grow them, and thus make themselves acquainted with them, than to remain in ignorance and pretend to despise them. They will find that to tie and bloom and dress the carnation, and to flower the auricula, will require some ingenuity, however apt they may be at learning; and that, notwithstanding close application, such knowledge is not to be acquired off-hand, or without some experience.

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* "Just as in the inorganic world chemical analysis is frequently the precursor of new forms of matter, resulting from the new affinities which take place; so when a vegetable dies, and the synthesis of its structural arrangement is broken up, Nature frequently avails herself of this season of decomposition, to bring new individuals out of the decaying structures of the old; which, in consequence of a beautiful pre-arrangement, find there all the requisite supplies for their growth and future maintenance."

Gardeners may rely upon it that our advice is not premature; ladies and gentlemen will want to find in their gardens those things which they see at shows: there is nothing more certain than this, and gardeners will have, sooner or later, to cultivate them; so that the sooner they begin the better, and by obtaining a few, which any gardener would give them, to begin, they will become gradually accustomed to them, and the care of a few will make it easy to superintend a good many, for it is mere increase of labour.

AN ABSTRACT OF REPORTS, PAPERS, AND PROCEEDINGS OF THE HORTICULTURAL SOCIETY OF LONDON, WITH NOTES BY A PRACTICAL GARDENER.

SHRIVELLING OF GRAPES.—It is well known that after the berries are formed upon the bunch, they advance pretty rapidly in size until the period when the seeds are forming, when for a time their increase seems suspended. Immediately after this it sometimes happens that the foot-stalks suddenly turn brown and shrink, and the berries, ceasing to increase in size, shrivel, acquire an unpleasant taste, and ultimately fall off. By many gardeners this disease is attributed to the badness of the borders on which the vines are planted, but it will be found that it arises from a totally different cause.

At the formation of the seeds, the skins of the berries as well as of the foot-stalks are remarkably tender, and consequently easily affected by the surrounding atmosphere. If fresh air is not given early in the morning, before the internal air becomes heated, a vapour rises in the house, which is perceptible by its condensing on the glass and walls, and on any ironwork that may be in the house. If under these circumstances the bunches of fruit are carefully examined, the moisture will be found plentifully collected on the berries, and more particularly on the foot-stalks. This is the destructive material, for as the temperature of the house is increased, an effect equal to scalding is produced on the cuticle of the berries, and hence the diseased appearance which they assume, and should the sun break suddenly out the destruction becomes complete.

To prevent this, one or two of the top sashes should be drawn down a little, early in the morning, and if the day opens out bright and sunny, the rest of them may also be drawn down. Unless the day be very warm, the front lights should not be opened, for a current of air is produced by this, which in cold weather is very liable to produce a spotting upon the berries, a disease scarcely less injurious than the scalding. This, however, does not prevent the berries from colouring, but if the spots become large, the berries take an irregular shape, and cease to improve in size. The first appearance of this disorder is a number of very minute brown spots, which penetrate quite through the skin, sometimes affecting some of the berries only, sometimes the whole bunch.—*Letter by Mr. D. Judd.*

THE CULTIVATION OF AN EARLY AND A LATE VARIETY OF THE PEAR ON THE SAME TREE.—The advantage of this plan in a small garden, where the walls are not extensive, is obvious; and even where there is a great extent of wall, when it is considered that it is mostly the south exposure that is used for the produce of early and late sorts of Pears, in the climate of Scotland, the benefit is great. By having the branches of Pear trees, alternately, one early the other late, there are as it were two chances of success; the Jargonelle being very early in blossom, if that fails in consequence of unfavourable weather, the late sort flowering at another time may succeed. Another advantage arises from the crop coming in at different seasons. The Jargonelle ripens off before much effort is required from the tree to support the late sort, so that the tree is more capable of supplying nourishment to half a crop of Jargonelles, than if the crop were all of that sort; and as the early Pears are all gathered before the late sort begins to swell to size, the tree is at once relieved from half its crop, and in that case more enabled to mature in greater perfection its late produce. My experience in the practice enables me to state that the trees produce finer fruit in this way than if they were all of one sort.—*Letter by Mr. D. Montgomery.*

[It is the practice in Scotland to grow several varieties of Pears on the same tree against walls. The necessity, caused by the climate, of training most of the Pears on warm exposures, has induced the adoption of this economy of wall room. It is however worthy of imitation in private gardens in England; for as few families can consume the entire produce of a full-sized well managed Pear tree of any one kind, much waste would be avoided, as well as more variety for the table secured, if every tree on a wall were worked with two or more kinds. We have successfully worked five sorts on a Jargonelle tree cut back on purpose, and nothing could do better; all we had to do was to use the knife freely to the Jargonelle, which wanted to supersede the others.]

THE ALPINE STRAWBERRY.—I possess two seminal varieties, which are rather larger and sweeter than alpine strawberries in general; from these I take runners in August or September, and plant a bed near to the garden pump, or pond. By the following spring the bed will be well stocked with plants, and early in the month of May, when they are in full flower, I cut away all the blossoms, preserving the leaves uninjured; this is again repeated at the end of the month. Towards the middle or end of June more blossoms appear, and the plants afford flowers and fruit all the latter part of the summer, and till cut off by the autumnal frosts. If the first blossoms were not removed, the principal crop of Alpines would be ripe at the time the larger strawberries are in season, and consequently of little worth; but by this mode of culture, they come into bearing in the latter part of the summer, just at the time the other kinds are over.—*Letter by J. Williams, Esq.*

[We prefer sowing the seed, and hoeing them out like turnips, for they grow best when close together; and without any other culture than keeping them clear of weeds, they bloom and bear from May till the frost kills them, and we have known this to be at Christmas. They do not require water if they are in rich ground and close together, for their own foliage appears to protect them.]

MANAGEMENT OF FRUIT TREES IN POTS. —I have more than once mentioned the importance of giving to fruit trees, from which a crop of fruit is required very early in the season, a high degree of excitability, or the power to vegetate very strongly in moderately low temperature, at the period when they are first subjected to artificial heat: and I have pointed out the advantages of retaining all trees which are intended to afford such very early crops in pots. I have endeavoured to ascertain within how short a period, in the ordinary temperature of my pine stove, plants of the Chasselas and Verdelho vine could be made to yield mature fruit. The subjects of this experiment had produced a crop of fruit previously to midsummer, and in the following month of July, they had been taken from the stove, after having been for some time sparingly supplied with water, and placed under a north wall; in which situation they remained nearly torpid till autumn, when they were pruned. Early in the winter, I observed in them strong symptoms of a disposition to vegetate, though they remained in the cold and shaded situation in which they were first placed, when removed from the stove: and on the 12th of January I found the buds so much swollen, that I feared the exposure to frost would prove fatal to them; and the pots were consequently removed to the stove. In this, the sudden increase of temperature occasioned every visible bud to unfold itself within a very few days; and on the 17th of the following month, being thirty-six days after the pots were brought into the stove, the berries of some bunches of the Verdelho grape were so far grown, that I could have thinned them with advantage. In the end of March the Chasselas grapes became soft and transparent, and in the middle of April some bunches were as mature, and much more yellow, than those of the same kind usually are when first brought to the London market in the spring; though the weather had been, during the earlier part of the spring, dark and cloudy, and consequently unfavourable. The wood of these vines appeared nearly mature in the end of April, and by removing them from the stove for a short time, to a cold and shaded situation, and subsequently replacing them in the stove, I do not doubt the practicability of obtaining another crop from them within the same year. A pot which contains a quantity of mould equal to a cube of fourteen inches, has been found large enough for a vine whose foliage occupied a space of twenty square feet; water holding manure in solution being abundantly given; and I have seen grapes acquire a larger size, and other fruits a higher flavour, under such management than under any other. The supposed necessity of frequently removing fruit-trees, which grow in pots, to other pots of larger dimensions, appears to present a good deal of inconvenience; but I have readily obviated this necessity, by means which I can confidently recommend to the attention of gardeners. When the plant or fruit-tree is first placed in the pot, in which it is long to remain, I mix with the compost some material, in greater or less quantity, which is capable of ultimately affording nutriment, but which will decompose slowly. In some cases I have used with success slender half-decayed branches from my wood pile; and in others I have employed sound chips, chiefly of apple-tree, mixed with mould, and in sufficient quantity to occupy at least one-fourth of the space afforded by the pot. As the roots of the plant increase, the lifeless wood gradually decomposes, at the same time giving food and space to the roots, which consequently do not become injuriously compressed in the pot. I possess a nectarine tree which has grown nine years in the same pot. Several successive crops of fungi usually appear upon the surface of the pots under the preceding circumstances; but I have had no reason to think these injurious.—*Letter by T. A. Knight, Esq.*

[Where very early forced fruit is required, the practice of growing the trees in pots has often been adopted with advantage; as there is much risk in obtaining a very early crop; and a failure of potted plants, of which a supply should be kept on hand, is less fatal to obtaining a crop than if permanent plants were exposed to the same chances and vicissitudes. Vines in pots are often forced; peach and nectarine trees more rarely; cherries frequently. All the small fruit, as gooseberries, raspberries, currants, &c., may be forced in pots. Plants for the purpose ought to be well prepared.]

CHARCOAL FOR HYACINTHS.—Sir Thomas Franklin once stated the effect of charcoal in restoring to health a hyacinth root, which was prepared for blowing in water, and after being a short time in the glass, threw out only a few fibres, which soon died at their extremities, the bulb becoming offensively putrid. A table-spoonful of powdered charcoal was stirred into the water, which immediately corrected the bad smell; but on the second morning after, it began to return. Charcoal and water being renewed three times at two days' interval, the root became perfectly sweet, and flowered as well and nearly as soon as one of the same variety (Groot Vorst) which was placed on the chimney-piece near it.

[This putridity could not have passed beyond one or two outer skins, because it was impossible to recover the rotten portion; but charcoal will sweeten anything; even putrid fish would no longer smell offensive if well covered with charcoal.]

LILIUM JAPONICUM.—In August of 1821, Mr. Brookes, of Ball's Pond, sent a specimen of Lilium Japonicum to the Horticultural Society, with the following communication:—The bulb was planted in the spring in a brick pit, used for the growth of Moutans, and at that time it was about the size of a small Nonpareil apple, being indiscriminately taken from a large number imported from China. The height of the flowering stems, of which it threw up five, was full five feet; four of the stems produced three flowers on each, in which the length of the petals is about six inches, and the expansion of the flower about seven inches; the remaining stem produced but one flower. The bulb was planted in equal portions of Wimbledon bog mould and strong loam, and until the top of the plant reached the glass it was occasionally covered by the light of the frame. Lilium japonicum appears to be sufficiently hardy to endure our winters, as I have had a bed of them in the open ground two years without protection; the leaves and stems were, however, much injured by the wind and rain, while growing, and none attained a height exceeding fifteen inches. I am therefore of opinion that if treated as a hardy plant, it should be grown in a situation well protected by trees and shrubs, and not in the front of the flower border. Like most of its congeners, it delights in shade, and is well adapted to ornament thick and close shrubberies where other herbaceous plants do not thrive; it is easily propagated by separating the scales of the bulbs, each of which in time will become a good plant; it forms also small bulbs on the stem, below the surface of the ground.—*Letter by S. Brookes, Esq.*

MANAGEMENT OF CAULIFLOWER PLANTS.—I sow the seeds of the Early Cauliflower in a south border, in the beginning of July, and as soon as the plants come up I thin them out to twelve or fourteen inches apart, where I suffer them to remain, keeping them clean, and watering them occasionally till about the middle of November, by which time they all produce heads from ten to thirty inches in circumference. As they are not hardy enough to bear more than three or four produce of early and late sorts of Pears, in the climate of Scotland, the benefit is great. By having the branches of Pear trees, alternately, one early the other late, there are as it were two chances of success; the Jargonelle being very early in blossom, if that fails in consequence of unfavourable weather, the late sort flowering at another time may succeed. Ar other advantage arises from the crop comi in at different seasons. The Jargonelle ri off before much effort is required fror tree to support the late sort, so that t is more capable of supplying nourish half a crop of Jargonelles, than if were all of that sort; and as the are all gathered before the late s swell to size, the tree is at once half its crop, and in that case mature in greater perfection My experience in the prac state that the trees produc way than if they were all *by Mr. D. Montgome*

[It is the practice in varieties of Pears o walls. The necess in of training most is thus sures, has induce ve inches, of wall room. ole length of tion in priva er being heated few families round it, by which of a full-si constantly warm. The one kind ant grows is sixteen inches well as the top, but the bottom is of every ensions, and the depth is about more its upper diameter. Soon after the sort was plunged in the sand, the roots of the po bulb found their way into the sand through the holes, as well as through a crack in the bottom of the pot, and have gradually extended themselves a considerable distance in it; and to this circumstance I attribute its luxuriant growth. The pit is frequently watered, and it seems as if the moistened sand was peculiarly congenial to this bulb. In October it produced its first blossoms; the next year it flowered three times, and the year after four times. The soil within the pot is a rich loam, mixed with a portion of vegetable mould and rotten dung. The house is generally kept in a brisk heat, and abundance of water is given to the plant, especially when it puts forth its blossom. The bulb in the thickest part, next the soil, is two feet three inches in circumference; a considerable part of it grows above the surface of the earth, having a long extended stem or neck, which terminates at the top in a crown of leaves spreading elegantly in every direction, with the ends bending downwards; the leaves are from four to five feet long, and from five to six inches wide in the broadest part; their

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mooth, and, when held up to the very regularly striated longi he flowering stem, or the neck of the bul compressed, not r cumference, gr in length.

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c an speckled with the flower, but du nearly all green; the germens swollen; the tubes from four to five long, nearly cylindrical, and of a dull shin lake; the backs of the laciniæ, before the expand, exhibit the same colour as the tub but more brilliant; the laciniæ, when expanded, are upwards of six inches long, lanceolate, and show their inner surface white with a broad stripe of lake down the centre; the filaments are purple, half the length of the laciniæ; the anthers, when open, are yellow; the stigma is purple, and a little longer than the filaments. The whole bunch of flowers grows compactly together; but frequently extends two feet; I have counted fourteen blossoms open at the same time, each of them a foot in expansion; they are individually of short duration, the outside ones open first, and at that time those that are nearest the centre are in the state of buds of different sizes, but all smaller and shorter than the outer ones. No description can convey an adequate idea of the splendour of this magnificent plant, which possesses the additional charm of an agreeable fragrance in its blossoms. The colour has been variously described as rose, rosy-purple, and carmine; but I think it is nearest to a lake. I have frequently impregnated the stigma with the pollen of its own anthers; but the germen constantly falls a short time after the flowers are withered.—*From a Letter by Mr. James Verrell.*

[Where there is the convenience of a stove there are few plants more worth cultivating than this species of Crinum, which has a noble aspect, and, when in flower, fills the structure with a most delicious fragrance. It is very easily managed, requiring, as here described, rather liberal treatment.]

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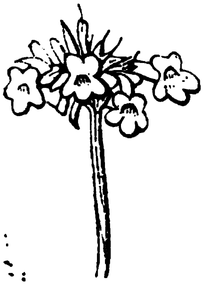
a neat and interesting object. It is particularly useful as an autumnal flowering plant for ornamenting the greenhouse, for which purpose it is well adapted, when kept cool and retarded in its growth during summer, so as to cause it to blossom about September. This is done by setting the plants during summer in a north aspect, and keeping them



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DR. LINDLEY'S TRUM

This plant is better known in gardens as *Bignonia picta*, under which name it was figured in the *Botanical Register* in 1842; it is not, however, the plant originally so named by Humboldt and Bonpland. In describing the species of Bignoniaceæ in the *Prodromus*, Alph. De Candolle has given it the name which stands at the head of this article, and which, according to the laws of botanists, it will henceforward bear.

It is a very elegant plant; a climber of moderate growth, adapted either for a large pot specimen, or for training to the front trellises and pillars of a greenhouse or cool conservatory; most of the Bignonias are very rampant growers, and do not flower well without they are allowed tolerably free scope, but the more restricted habit of the present plant is a very great additional recommendation to it. The plant is smooth, the stems furnished with opposite leaves, which are what is called conjugate, that is, two growing together on the same petiole; in other words, the leaves grow in pairs; thus, at each joint will be found two pairs, or four leaves (properly leaflets) about three inches long: from the apex of each petiole, and between the pair of leaflets which it supports, a tendril is produced. The flowers grow at the apex of the numerous short lateral branches, and are always produced in pairs; the calyx is bell-shaped, with five sharp-pointed teeth; the corolla has an obconical almost cylindrical tube, about two inches long, divided at the end into five obovate roundish somewhat undulated lobes; these flowers are about an inch and
coloured, the
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The history of the in
is rather obscure. It ap
first flowered, in 1842, by M
of Tooting; and is supposed to h
troduced from Buenos Ayres, or sou
cent part of the South American contin
In a cultivated state it blooms through
considerable part of the mid-summer months.

Our subject was at first grown in the stove, and has been subsequently regarded as a half-hardy plant. We are not aware to how great an extent its hardiness has been tested. In the meantime, as a greenhouse conservatory climber, there are few plants calculated to produce a finer effect on the lower parts of the trellises and pillars near the front of the house. It should be planted in rich loamy soil somewhat lightened with peat, and allowed a tolerable range for its roots. If potted, a similar soil should be used, and a considerable share of pot-room must be allowed. When planted out, of course the branches must be fastened to the trellises provided for them, but only the principal ones should be so fixed, all the smaller lateral branches being allowed to hang free, and assume their own natural positions. If kept in a pot, there is no better plan than that of leading the principal stems spirally around a cylinder-shaped or pillar trellis. It is not desirable to train climbing plants too rigorously; they like their liberty, and thrive better, if to some extent it is allowed them; but, of course, they must not be allowed to run into confusion, and should be finally trained in, before they become set to any awkward form. The position of the branches ought never to be altered at or near the blooming period, as this is certain to displace the foliage, and if this has not time to right itself, the effect of the plant is spoiled. It is scarcely possible—nay, as a rule, it may be regarded as impossible—to alter the position of a branch of a climbing plant, and yet retain the foliage in the same plane; young shoots soon accommodate themselves to the position in which they are placed, but with older branches this takes longer time to accomplish. Of water, a pretty good supply will be required, at least during growth; this, during the season of rest—that is, the winter, may, of course, be in some degree limited. The branches will require an annual pruning and regulation; this is best seen to in autumn, and should consist in removing entirely any old worn-out shoots, as well as such parts of the younger ones as are unripe and immature. If this is done early in autumn, the additional exposure to light will assist the remaining portion in ripening completely before the winter comes on. It is only from such perfectly matured and fully ripened wood, that strong vigorous growth, with abundant blossoms, can be expected.

Propagation is to be effected either by seeds, when they are obtained, which should be sown in pots of light soil, and set in a hotbed; or by cuttings of the half-ripened slender shoots, planted in sand, and placed in a hotbed. In either case, the sooner—after roots are formed—the plants are potted separately the better; and the young plants should be nursed on in a warm house or frame until they have acquired some strength, when they may be treated in the same way as mature plants.

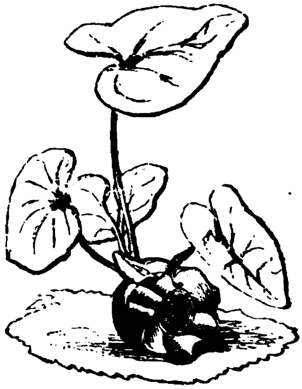
HETEROTROPA ASAROIDES.

(Decaisne.)

ASARABACCA-LIKE HETEROTROPA.

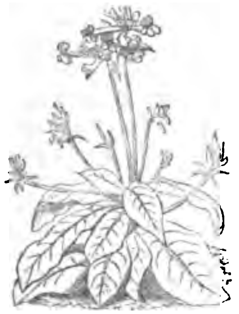
THIS plant has more singularity than beauty to recommend it. It is closely allied to the Asarums, or Asarabaccas, of which three or four small hardy herbaceous species are cultivated in botanical collections. The whole natural family to which these belong, the Aristolochiaceæ or Birthwort tribe, is remarkable for a peculiar grotesqueness of character and luridness or dulness of colouring. In the genus Aristolochia, of which there are many fine-climbing species in cultivation, there are some species whose blossoms are exceedingly curious—long pouch-like bodies, bellied out on one side, here contracted, there dilated, and presently spreading out like a broad flap, or in other cases stretching into a long narrow tail, and often curiously chequered in colour. The present plant accords with its congeners, in the flowers being of a dull hue, and possessing a singular conformation.

Both the Heterotropas, and their allies, the Asarums, are small perennial plants. The present plant, indeed, does not exceed six inches in height, and is of evergreen habit, producing two or three leaves from the crown, and throwing out on a short stalk, so as to be situated close to their base, one of its singular blossoms, which lasts a considerable time in perfection. From the crown of the plant proceed downwards a few short thick fibrous roots, and upwards the tuft of leaves, which are borne on stalks three inches and a half long; they are cordate, with a deep indentation at the base, three to four inches long, slightly waved and reflected at the edges, dull green and irregularly blotched with lighter coloured spots on the upper surface, and shining, and having purple veins and blotches beneath. The flower is seated at the base of the leaves, and is about as large as a walnut, and of a cartilaginous texture; it is perfumed somewhat like a ripe apple; it consists of a spheroidal tube, shining on the outside, of a dull purple colour marked with grey, and a three parted reflected limb, of a darker purple. The segments of the limb are large, rounded, undulate, and transversely wrinkled; near the throat these wrinkles are drawn up into thin wavy edges of a brighter purple, the outer ones crested with white; the throat is half closed by a transverse plate of the same structure, having a triangular opening in the middle. These appearances are pretty well indicated in the engraving.



The Heterotropa is regarded as being the same as the *Asarum virginicum* (Thunberg), a plant which is met with both in Virginia and in Japan; this Asarum is recorded to have been introduced to this country so long ago as 1759. More recently the plant has been brought by Siebold from Japan, and from this source was re-introduced in 1836, and distributed among some few botanical collections. When kept in a greenhouse, it comes into blossom about the end of February; but treated as a hardier plant it blossoms during April, and sometimes in May.

It should be kept in a pot, and during winter ought to have the protection of a frame; in summer they ought to be placed in a cool, somewhat shaded situation, and must be liberally supplied with water. If they are set in a situation where they will obtain only the morning sun, they will thrive well enough. The soil for them may be any light loamy soil, but a mixture consisting of equal parts loam and peat, with a little sand, is, perhaps, as good as any to keep them in a healthy condition, and in a medium state of growth. They are propagated without difficulty by dividing the plant into as many pieces, if requisite, as there are crowns.



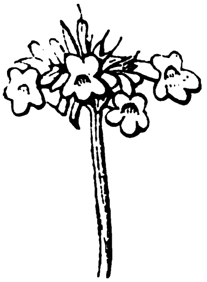
TETRANEMA MEXICANA.

(*Bentham.*)

THE MEXICAN TETRANEMA.

THIS is a very pretty little greenhouse or frame herbaceous perennial plant, growing with a tuft of ovate-oblong leaves, wrinkled something like those of a primrose, but more pointed, and throwing up to the height of six or eight inches many slender flower-stems, bearing at the top a corymb usually of from ten to twenty flowers. The flower consists of a slender tube, divided at the extremity into five spreading segments, forming what is called a two-lipped flower, that is, the division between the two upper and the three lower segments on each side are deeper than the other division, thus forming two main divisions, which are respectively called the upper and lower lips. As the name implies, it is a native of Mexico, whence it was introduced about 1841. The flowers are produced, according to the treatment given, during the summer or autumnal months.

The plants may be grown into a large tuft with several crowns, or of smaller size with a single tuft of leaves, and in either way forms a neat and interesting object. It is particularly useful as an autumnal flowering plant for ornamenting the greenhouse, for which purpose it is well adapted, when kept cool and retarded in its growth during summer, so as to cause it to blossom about September. This is done by setting the plants during summer in a north aspect, and keeping them pretty well potted in the early part of the season: they must be regularly supplied with water, so as to sustain no check from droughts which might induce the flowering state. Towards the end of August they may be removed to a frame with a southern exposure, where they may be protected by the sashes at nights and during heavy rains, but not entirely closed up. As they come into flower they may be removed to the greenhouse. The soil for them should be composed of about three parts sandy peat, and one part turfy loam, and the pots must be well drained with broken potsherds and lumps of charcoal. For a large-sized plant a five-inch pot will be suitable; but the small single crown plants above referred to, will flower well in a three-inch one.



It is desirable to keep a continued stock of young plants, for although a perennial, the older plants sometimes die off suddenly, and young plants of a year old are generally more vigorous in their growth. In the winter the plants must be kept on a dry shelf in the greenhouse, or in a *very dry* cool frame. They do not require more than protection from frost; but are liable to suffer much injury from confined damp; and where there is the convenience of a greenhouse this will be found the least troublesome way of preserving them. If they are placed in frames, the frost must be excluded either by coverings or the application of slight artificial warmth. For flowering at the ordinary season, the plants may be repotted in spring, and set in the front part of the greenhouse near the sashes where there is plenty of air; and if it is not convenient to continue them in that position they may afterwards be removed to the shelter of a frame—not, however, in a shady position. The plants are impatient of an excess of water at any time, and therefore, whenever exposed to the open air, must be guarded against heavy rains.

When first introduced this plant was thought to be a Pentstemon, and for some time passed in gardens under the name of *Pentstemon mexicanum.* It is, or was, also called *P. primulinus* in some continental gardens. It was, however, found to be botanically distinct from the Pentstemons, and was accordingly named Tetranema, derived from *tetra*, four, and *nema*, a filament, in allusion to the number of stamens found in its blossoms, Pentstemon having five stamens. It belongs to the natural order Scrophulariaceæ, and the Linnæan Didynamia Angiospermia.

FLOWER SHOWS.

CAPABILITY FOR ACTING AS A JUDGE.

WITH regard to the judgment displayed by men of experience in Floriculture, nothing can be much clearer than the fact, that it must be a sort of natural gift that qualifies a man for a good judge, otherwise those who have had great experience could never commit the errors they do in their awards of prizes, and opinions of Florists' flowers. When Mathew's Enchantress first came out we said in an instant it was the best of its class; one florist, who has been considered to know something about these things, would not allow it had any such merit; no, it was crumpled, it was this, that, and the other. Now, however, it has been out awhile, and people have grown it upon our recommendation, nobody ventures to dispute that it is, as we affirmed, the very best of its class. We could mention twenty similar instances. If we go back to Dahlias, it will be remembered that Mr. Widnall disputed with us about Springfield Rival, and others besides him insisted that Widnall's Perfection was the better flower. Nay, it was obstinately contested, when shown the year it was let out; but with half a glance, we had determined its merit in the seed-bed, and up to this day it can rarely be beaten in all points in its own class; at all events, it outlived the Perfection by many years. It may be, that interest has something to do with florists' decisions, but men will not wilfully stake their credit upon events that must be decided against them ultimately. We are bound, therefore, to believe that they are not good judges, and that practice in such cases does not make perfect. There is such a thing as showy flowers out of character. There are occasionally extraordinary specimens of flowers, not generally good; and as judgment can only be formed upon what is placed before us, it is quite possible a man may be deceived, however good judge he may be; and the only check against being deceived is, to require a number of blooms, and to have it declared from how many plants they have been cut. The greatest plague a raiser has to contend with is uncertainty, and some of our most beautiful flowers have been abandoned because they were uncertain.

Turner's Metropolitan, the finest model of a flower that ever was seen, proved so uncertain, that he gave it away instead of charging for it; and we have had more than one letter, stating that it was the finest flower the writers had in their collection. Had this gone out at half-a-guinea we should have been abused by all the buyers for speaking highly of it. Egyptian King was handsome and uncertain, Conqueror of the World was beautiful but uncertain, and many others have been nearly or quite abandoned, only because a man had need grow a hedge-row of them to get a bloom, and then perhaps might fail. If, then, the best judges, who must decide from what is before them, are liable to mislead when a flower is very uncertain, how much it behoves a Society to procure good judges—in seedlings, not merely people who have bought, and sold, and grown the flower they are to judge a long while, but men who are known to decide upon principles, and who know when they see a good flower that it is so. No man can be a good judge until he can go in among flowers with a perfect model forcibly impressed on his imagination; he can then instantly detect imperfections, and decide whether they are sufficient to justify the rejection of the flower. We have seen so repeatedly the error and obstinacy of a man who has fancied he was a judge, and contested the points with one who really was so, that we think judges as important as prizes; and the Society that cannot employ the one might as well not give the other. It is a complete farce to send in mere growers; and to fancy that a man can learn it if it do not come natural to him, is a fallacy. We have watched the progress of an amateur who has been some years employed to give opinions on flowers, but who is as incapable now as he was the first hour he was set at it, and has committed his employers as much the very last year as he did the first, though from the fact of being considered no authority, the mischief he does is very limited. We have been sadly blamed for attributing to design what has been purely ignorance, but we have honestly done it: we have believed it was design, on account of the extravagance of the injustice committed, and we have felt it impossible to believe that a man's vision could so deceive him, as to enable him to arrive at a conclusion so palpably wrong. Who, for instance, could believe that any living man who had ever seen a dozen dahlias, would have placed Brown's Model above the Standard of Perfection? Was there a shadow of a chance to the uninitiated that such a decision was accidental? Who in this wide world would believe it possible that the Fuchsia St. Clare could have been honestly recommended as worth a single penny, or the pot it was grown in? Surely when things so utterly worthless can be recognised by anybody, we might be pardoned for attributing it to design, in the belief, that it was impossible to be the result of an honest opinion. Men who have no better pretensions to a sound judgment do not act honestly in undertaking the task, and they completely lay themselves open to whatever animadversion people may make upon their extraordinary decisions. Strange as it may be, there is rarely a show in which there is not some strange muddle in awarding the prizes; and often is it so outrageously incorrect, that exhibitors feel indignant and mortified beyond measure at the result; we even now find it difficult to bring our mind to believe that men can be so thoroughly ignorant as to commit such egregious blunders. A Pansy at the last Surrey Flower Show was awarded a prize, and called Perfection: the judges may have thought so, but if they did, they ought never to judge another.

We have often made men very angry by rejecting their flowers; but, although we have been, in common with many others, disappointed at a flower turning out uncertain after it has been exhibited in first-rate order, we never condemned one that was, as compared with those we possessed already, at all worth growing; yet have we been often obliged to battle a thing out against three or four people who have obstinately contended for giving a prize to a thing not worthy of it, but which, in their eyes, from some cause or other, appeared to deserve one. We incline, therefore, to believe, that some men are not good judges, and never would be; they never see, or if they see, they lose sight of the most palpable blemishes, and they get angry with us for pointing them out. We have been now nearly fifteen years endeavouring to teach men how to estimate flowers and plants; but, although they agree with us as to the points, they overlook some of the principal ones, and when left to themselves, commit sad havoc in awarding prizes; as if they had never been shown the difference between a good and a bad thing.

There is no personal merit in being a good judge, because it is not easily acquired. It must come, and does come natural. Those who really do understand it, see faults and excellencies in an instant, and want no prompting. Those who do not possess the faculty, may have the faults and beauties pointed out one half hour and forget them the next. Our conclusion, and it is a charitable one, therefore is,—the dealers who have put forth the most worthless things at high prices, and assured the public they were excellent, have thought they were so; but if we allow their decisions to have been honest, which is allowing a good deal, we must, nevertheless, insist that no man who has done so, ought to trust himself. If the public trust him again, he is fortunate.

G.

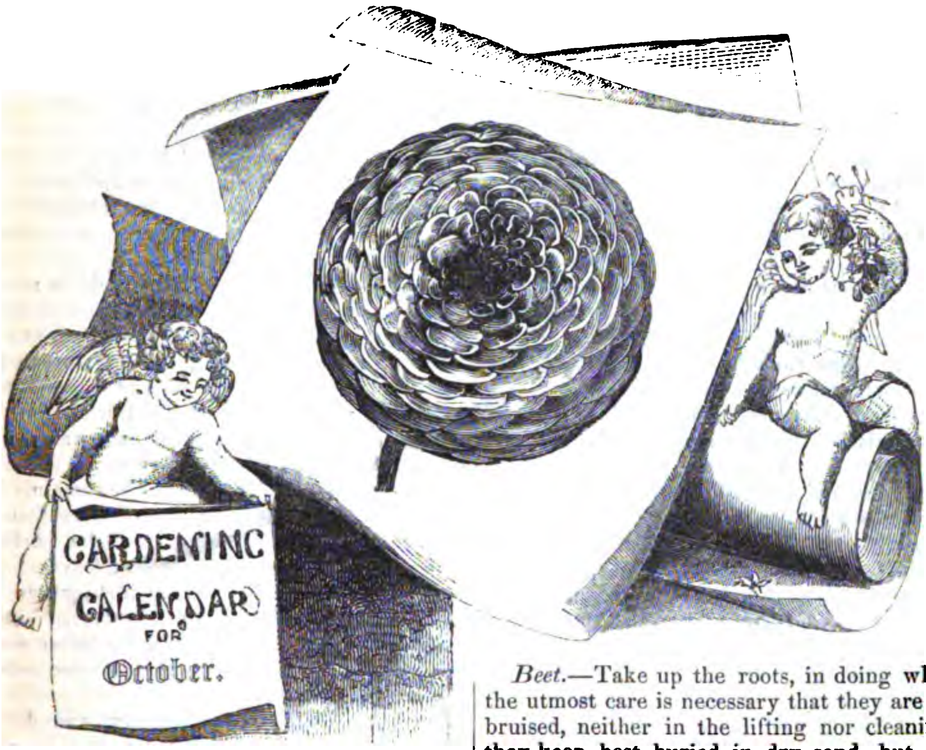
EFFECT OF GARDENING ON THE RURAL POPULATION.

The good effects of Cottage Gardening is already universally acknowledged. The emulation excited by exhibiting their productions at flower shows, has been doubled, not in all cases, but in many. It will be admitted that the temptation to labour cannot be too great, and to the excitement of this feeling ought all public exhibitions to tend. Many Societies, with the best intentions, have, nevertheless, done a good deal of mischief. They have given prizes for flowers among a class of men who could not, in justice to their families, afford to buy them, and the natural influence of this has been unfavourable. Cottagers, with not a shilling beforehand, have, notwithstanding, shown half-guinea dahlias, and seven and sixpenny roses, and two-guinea geraniums, and ten-shilling tulips. These things are highly improper. If they were honestly come by, the money was withdrawn from the family; if not honestly come by, the very people who tried to advance the morals have been engendering a vice which must end fatally. A Society with proper notions cannot offer premiums for extravagance any more than it can offer rewards for peculation, because one engenders the other. If a cottager once is made to calculate on beating his rivals by the superiority of his collection, there is an end of all reliance on industry. It matters not whether he begs, borrows, steals, or buys his costly flowers, any or all of them are mischievous, and have a bad effect on the morals. Raise a man's ambition to produce better carrots, cabbages, potatoes, and useful vegetables than his neighbours, and you will excite the ambition to shine in a right cause.

Let us observe the effect of a certain county Society on the exhibiting cottagers. Prizes were given for dahlias, roses, tulips, and many other costly subjects perfectly inconsistent with the probable income of the people who were to compete, being persons limited in their rentals to under ten pounds. There were also prizes for vegetables. One man had won the head prizes for three years, and another, who struggled hard against him for the ascendency, was always just beaten. It chanced that we were judges on one occasion—the two rivals were in the field, and both had good flowers—one, however, was apparently well to do, the other very poor. Seeing that there were flowers in both stands very incompatible with the men's apparent, or rather their ostensible means, we made searching inquiries into both their means, and found them very different. One had beggared himself, and made away with his own clothes, and neglected his wife's and children's appearance, and spent the money in flowers,—the other had been regularly served by a gardener in the neighbourhood with everything from his master's collection, and the said gardener "went halves" in all the cottager gained by showing and selling flowers. In one case, a man had been frugal and well off until a wrong spirit had been aroused by the award of prizes for flowers among men who could not afford to buy them. He had been beaten time after time by better flowers, and resolved to get better still, if possible. He purchased upon credit, and paid for them at so much per week, which had to be withheld from his family; and deprived them of comforts, of respectability, and engendered a sort of indifference to appearances, that went a long way towards confirmed demoralization, especially as the man, from some cause, neglected one of his payments, and became reckless, and the dealer, seeing he would be likely to lose, took the first steps towards compelling payment. The other, with the sole ambition of beating his fellow but more humble brethren, had consented to be the receiver of things stolen from a gentleman's garden, which, perhaps, he would never have thought of but for the folly of those who awarded prizes to poor men for subjects which are only appropriate to those in good circumstances. It may be said that the object was only to encourage the growth of common flowers; but where is the limit when the prizes are for the best? They might as well offer a race-cup for cottagers' horses, and say they meant the cottagers to run only their cart-nags, as to give prizes for the best flowers shown, and suppose that all would show common. But there is no excuse for awarding prizes to cottagers for flowers of any kind (except, perhaps, cauliflowers), because for cottagers' purposes they are perfectly useless, and for mere ornament to their gardens the cottager wants no prize to induce him to cultivate all the flowers he ought to adopt. There is not one good purpose to be attained by inducing cottagers to grow flowers. If he loves them, he will get enough for his garden for his own sake; and if he does not love them, all the time he is induced to spend on them is labour instead of amusement; whereas his vegetables ought to be encouraged; superiority in the culture of them is desirable. Everything that can influence a working man to occupy his time in producing that which is food or money, leads him the right way. The expense of vegetable seed is comparatively nothing to the value of the food produced. There is no temptation to beg, borrow, steal, or even to buy enough to hurt his home, or deprive his family of their proper clothing and comfort, so far as his ordinary circumstances permits; whereas, if he is induced to lay out crowns for this flower, half-sovereigns for that, and even shillings for the other, he saddles himself with weekly payments which he cannot withhold from his family without curtailing their respectability and endangering their morals. If the mind be broken down by privations, and the pride of neatness and cleanliness be wounded for want of the means to indulge it, it soon becomes reckless. The most creditable pride the mother of a family can have is that which she takes in neatness and cleanliness. If she be deprived of the means to procure decent clothing for herself and children, every week renders her condition worse, and the case more hopeless, because time makes rapid inroads on dress. The more homely it is the more constant must be the care and attention; but time and attention cannot create new, though it may preserve old for a definite period.

The madness of giving premiums for extravagance, of rewarding poor men for apeing the rich, of encouraging a man whose only time for himself is short, to fritter that little away upon useless, profitless subjects, is worthy "the root of all evil," instead of rational men. Yet we find it more or less prevail in all councils. If the devil set about his work of demoralization ingeniously, he could not begin better than by arousing the ambition of those who have nothing to spare, and induce them to vie with each other in wasting what they had not to spare upon worthless subjects. Carry this passion on to an extreme, and step by step they will commit every crime against property to advance their objects, until a community of contented happy beings are converted into thieves or receivers.

We may be rather harsh in our denunciations against cottagers being invited to compete with each other in the exhibition of useless subjects; but it so counteracts all the good which arises from showing vegetables, that we confess we would rather see the industrious classes banished altogether from shows than be allowed to compete for prizes given for flowers, as if the object were to encourage them to prefer ornament to utility, waste and extravagance to economy, sharping and overreaching to honourable rivalry.



THE KITCHEN GARDEN.

Sow angelica, dill, beans, parsnip, peas, radish and salads.

Plant and Transplant borecole, brocoli, cabbages, cauliflower, chives, garlic, horseradish, lettuce, potatoes, shallots, and all sorts of herbs, as balm, burnet, fennel, hyssop, mint, pennyroyal, rue, tansy, thyme, &c.

Take up and store beet, carrot, cauliflower, Jerusalem artichokes, onions, potatoes, parsnips, scorzonera, salsify, and turnips.

General Directions.—The winter operations, such as digging, trenching, and ridging the ground, may now be commenced, previous to which the ground must be cleared, and this will consist principally in taking up the various tubers and roots, which should be done in dry weather; indeed, it should be a rule, that no out-door work be done in wet weather; with good management this will never be necessary, as the cleaning, turning, and storing of roots, the making of stakes and tallies, and similar matters, will be sufficient occupation during wet periods.

Angelica.—Sow (as soon as the seeds are a little hardened,) upon a moist soil, and cover slightly.

Beans.—Plant in a warm spot, any time this month, in shallow drills, two and a half feet apart, and draw up the soil in covering them so as to form a small ridge.

Beet.—Take up the roots, in doing which the utmost care is necessary that they are not bruised, neither in the lifting nor cleaning; they keep best buried in dry sand, but will also do amongst charcoal, dryish soil, or even covered with straw, in a cool dark place. When removing the leaves, cut them off in a conical form, and not so close and horizontal as is done with turnips.

Borecole.—Plant all that there is room for, and as early as possible; run the hoe through amongst those planted last month, choosing a dry day for doing so.

Brocoli.—Check, by laying the plants over on their side, with the tops northwards. The operation is performed thus:—take out a spadeful of earth on the north side of each plant, then put in the spade on the opposite side, and gently raise and press the plant down, using the soil taken out, the more effectually to keep down the stem; this operation is very necessary in severe winters. Go over the whole of the early sorts and watch their progress, cutting the heads as soon as ready.

Cabbage.—Prick out, and plant early, both on a south and north aspect. In severe weather the latter will be found the best situation; dust the seed bed slightly with soot and lime mixed.

Cardoons.—Earth up the first dry day, taking care that no soil gets into the centre of the plant, to prevent which, it is necessary to tie up the plant closely with twisted hay-bands.

Cauliflower.—Prick out the young plants in frames, hand-lights, or in pots, and keep under glass, but give as much air as possible; dust the young plants with soot and lime, which prevents damp, as well as the attacks of vermin.

Celery.—Continue to watch the progress of celery, and encourage it by earthing it up often, but not much at a time; never allow the soil to choke the plant by getting into the heart; do not touch it when wet.

Chives should be taken up and re-planted every two or three years; give them rich common soil, and a distance of twelve inches apart one way, and six the other.

Dill.—Sow early in a light soil, and in a warm spot, and cover slightly.

Endive.—Lift with balls, and put it in frames, giving no water over head, and admitting air freely. In sheltered places it should be tied up, and allowed to stand until used; always work amongst it when quite dry.

Garlic.—Plant in a dry and a rich soil, in shallow drills three or four inches apart in the drill, and ten inches between.

Herbs, as balm, mint, tansy, &c., may all be transplanted now, putting them in a medium rich soil, and apportioning the distances according to the height and nature of the plant; it is an advisable plan to keep them together.

Horseradish may be taken up and re-planted, reserving all the finest for winter use; it will keep fresh if laid amongst sand, or with parsnips or carrots.

Jerusalem Artichokes may now be taken up and laid amongst sand, although they will keep without it; or they may be dug up a few at a time, as wanted.

Leeks should be hoed, and the soil drawn slightly up about them.

Lettuce.—Dust over the small plants with lime and wood-ashes. Plant out those intended to stand the winter in the warmest available spot, and some under hand-glasses, or in frames. The older plants may be lifted with balls, and put in neat rows in frames, giving plenty of air and little moisture.

Onions.—Have the August sowing hoed, and thin them out for using in salads. Look over those gathered in last month, and clean them thoroughly; in doing so handle them gently.

Parsnips.—Take up, dress, and store these amongst sand; the roots are the better for laying a day or so in a dry place; try an autumn sowing if the ground is dry, deep, and rich, but not lately manured.

Peas.—Sow any of the early sorts, say Prince Albert, or Racehorse, at the end of the month, along the bottom of the wall; this situation is to be preferred from its shelter, and the facility afforded for protecting them; guard against the ravages of mice by trapping, or mix among the soil coal ashes, or any such materials.

Potatoes.—Plant largely of the early sorts, as they are not so liable to be attacked by disease; put in the main crops now, and avoid using any rank manure, and cutting the sets. Those being stored should be laid thin, and often turned, picking out those infected; in every case they must have a cool and dry place; if they get damp, a dusting with lime or charcoal is good.

Radishes.—The last sowing should be made early, upon the warmest border at command.

Salads, as mustard and cress, if sown at all, must have a warm spot, or a frame; it can be raised in boxes or large pots at any season, where there is a command of artificial heat.

Salsify.—Take up, dress, and store amongst dry sand. The same with *scorzonera.* Allow the fibrous roots of both plants to remain.

Savoys.—Plant early; they will be found useable about Christmas; hoe the earlier plantings, and divest them of dead leaves.

Shallots.—Plant in drills an inch or two in depth, and six inches and a foot apart.

Spinach is much improved by being well thinned and thoroughly cleaned; choose a dry day for the operation.

Turnips.—Take up when dry, and dress and store away in a cool place, throwing a little straw, or such like, over them, to prevent the action of the air from shrivelling them.

THE FRUIT GARDEN.

General Directions.—The thorough draining of the places where fruit trees are to be planted should be early attended to; and such trees as have dropped their leaves may be lifted. Lose no time in gathering in the various fruits, which must now be ready, and hasten the ripening of grapes and late fruits, by covering at night, and removing every shoot that is not required for fruit next year. Pruning and nailing may be seen to, about the end of the month; and figs should, in cold situations, be early protected by a covering of straw and mats.

Fruit Room.—Continue to keep this apartment cool, and have each sort distinctly marked, and laid out neatly in single layers; none but those of superior quality, and free of taint, should be retained; the early sorts, or such as are being used, may be laid thicker, but avoid heating or sweating them at any time. Always handle the fruit carefully; the bruises which are sustained in the processes of gathering and housing, are a prolific source of decay.

Apples are most easily blemished, and must be collected as if they were eggs; when the baskets are emptied make the fruit fall or roll, as it were, over the arm. If severe frost threatens, it will be well to protect the good sorts that remain ungathered, but this is seldom necessary.

Apricots.—Switch off the remaining leaves, and free the trees of any webs and rubbish collected amongst the branches; defer nailing and pruning until spring.

Cherries may be pruned and nailed as soon as the leaves are off; and young, and even old trees, may be transplanted now.

Currants.—The pruning and winter dressing may be proceeded with by the end of the month; cuttings of the good sorts may also be put in now; make them about eight inches long, and insert them in the soil about halfway, leaving three eyes at the top, and providing about two inches or so of clear stem; remove all the lower buds entirely.

Figs may be slightly protected by the end of the month, attempting before then to have the wood thoroughly ripened; divest them now of all advanced green fruit.

Filberts, when gathered, may be spread thinly out for a time; after which, they will clean and store away the better in jars, amongst dry sand, where they will keep for a moderate period.

Gooseberries.—Fresh plantations may now be made; the established plants pruned and dressed; and cuttings put in amongst a soil of sand and leaf mould. The plants like a rich and deep soil.

Medlars should now be gathered, if not done; they are used when in a state of decay, as are the fruits of the service-tree.

Nectarines.—Clear the trees of all green leaves and wood, and still make the most of the sun; defer pruning and nailing.

Peaches.—Give the same treatment as nectarines; both may now be transplanted.

Pears.—Take equal care of the late sorts as of the early ones; indeed, *they* must be more carefully gathered, as they mostly keep for a long time. Pruning, nailing, and transplanting may be proceeded with.

Plums may be pruned and nailed at the end of the month; attend to laying in the young wood thinly and regularly.

Raspberries.—Prune and tie up partially, as they are apt to be twisted too much. Make new plantations on a rich soil, and plant them at from four to six feet apart, according to the soil.

Strawberries.—Finally dress, by cleaning and top-dressing them with a rich compost of rotten manure and loam, and slightly fork it in.

Vines.—It may be safer to have canvas over these at night; give all the light and sun possible during the day, and take away any superabundant wood that may now manifest itself; hasten as much as possible the ripening of the wood.

THE FORCING GARDEN.

General Directions.—The principal operations will consist in giving every place and plant a thorough cleaning. Pruning must be done as early as possible. All plants to be forced should be taken under cover as far as practicable. Soils for raising salads, &c. must also be kept from rain. A low temperature must prevail in the whole of the apartments, and, as a matter of course, little water will be required. Late houses may have a little fire to ripen the wood, and the same with pits.

Cucumbers.—Temperature, from 70 to 80 degrees by day, and 60 to 70 degrees by night. Introduce a fresh supply of plants, unless those now in are young and healthful. For many reasons, a house is preferable to either pits or frames for their winter culture; the structure, previous to introducing the plants, should be filled with sulphur fumes, than which there is nothing more effectual for destroying the eggs of insects, &c. The soil should contain a good portion of charcoal; and, if they are grown in pots, it must be made very rich by watering. In every case, train them on a trellis; give air freely.

Figs.—Temperature, from 50 to 60 degrees by day, and 40 to 50 degrees by night. The chief point to see to now, is that the wood is thoroughly ripened, and the house may be kept warmed if need be, otherwise it may be thrown open night and day; have the trees pruned and tied in, and the house cleaned by the end of the month.

Kidney Beans.—Temperature, 70 degrees by day, and from 45 to 50 degrees at night. If not already done, a few of the seeds may be put in now. Sow three seeds in a nine-inch pot, or sow in boxes and transplant them so in pots. Frequent waterings are necessary to keep down the red spider. The advanced crops should be in the pine stove, and kept near the glass. The tops should be often stopped, and the plants must not be grown with too much luxuriance.

Melons.—Temperature, from 50 to 80 degrees. It is possible that the late crop is not quite cleaned off, to do which, give fresh linings, and apply a little fire heat.

Mushrooms.—Temperature, 55 degrees. These are at all seasons expected. New beds should now be formed. The exhausted beds will partially recover from an application of tepid liquid manure. The dung for new beds should be well sweetened, and made up when in a *medium state,* as to warmth; attention to this is important.

Musas.—Temperature, from 60 to 75 degrees. The heat and moisture must be gradually decreased. Thin out the suckers to one, in a pot or tub; those planted out may have two and three left.

Oranges.—Temperature, from 45 to 60 degrees. These do best in rather a low temperature in winter. Little water will be requisite; this should be given in the morning.

Peaches and Nectarines should be kept exposed night and day, excepting those which are very late, when a little fire heat will be necessary to ripen the wood; have the early houses pruned and washed, and apply a good soaking of water to the soil after it has been dug or forked over.

Pine Apples.—Temperature, 70 to 80 degrees by day, and 60 to 70 degrees by night. The heat must be gradually lowered, as the dull months advance. Give the plants their winter shift into a fresh-made bed, if the heat is maintained by fermentation. The large plants should have larger pots, using more charcoal in the soil than before. Keep out all those in fruit, and ripen them off in one of the late houses.

Strawberries.—Those in preparation should be set under glass, or the pots turned on their sides to keep them from getting too wet.

Vinery.—Temperature from 60 to 75 degrees by day, and 50 to 60 degrees by night. The early houses should be kept open and the vines pruned early, and washed over with sulphur and tobacco water. The late houses must have a little fire in damp weather, and air night and day when fine, but cut decayed berries from the branches as soon as they are seen, and keep the atmosphere of the house dry, with as little fire aid as possible.

FLOWER GARDEN AND SHRUBBERY.

Sow nothing unless it be some very hardy annuals, and give these a dry and warm situation, or defer altogether until spring.

Plant and Transplant every thing that it is intended to remove; the removal of shrubs may be proceeded with, also bulbs, the laying of box, turfing, &c.

General Directions.—As autumn planting is generally approved, the following rules may be worthy of attention when considerable alterations are contemplated:—Lift no plants until ready for them, and plant the foreground first; choosing the dwarf and slow growing plants for the front, and reserving the tall and fast growing for the back: give variety of colour and foliage, yet maintaining a unity of form or design: where extent admits, put such plants as cypresses, rhododendrons, &c. in masses: at all times avoid crushing in a plant except it be to screen and stop the view from something out of character: give boldness to conspicuous places, prominence to good specimens, and by marginal undulations give depth to views. Have in the mind's eye the effect to be produced years hence as well as the present: strive to produce a striking and beautiful appearance in spring; enhancing it in summer; maintaining the same in autumn, and adding then a new feature in the varied tints of the foliage; and withal and principally, give freshness and grandeur in winter. The following plants will suit, with a few variations and additions:—In the front, Azalea, Andromedas, Boxes, Berberries, Cotoneasters, Daphnes, Garryas, Laurestines, Kalmias, Rhododendron hirsutum, Roses, and Spiræas will be available:—in or about the middle, Arbutus, Alaternus, Aucubas, Arbor-vitæs, Almonds, Gueldres roses, Lilacs, Magnolias, Junipers, Hollies, Irish Yews, and Rhododendrons; whilst the back part may be filled with such as Acacias, Laburnums, Laurels, Pines, Taxus, Thorns, &c. In forming a promiscuous collection such as the above, it is well to have a border in front, where may be interspersed many flowers, as Dahlias, Fuchsias, Hollyhocks, and many annuals; but in forming masses of one thing, as Rhododendrons, they must have the grass or gravel close around them.

Alpines.—Have these put in frames or in cradles immediately; see that the drainage is perfect, and remove the surface soil.

American Plants (as Rhododendrons, &c.) may be shifted at any time; they delight in a shady place and a peaty soil, but they will do also in good loam.

Anemones.—Plant now for early flowering: turfy loam, and rotten cow-dung at the bottom, suits them; put the tubers three inches apart in the row, and ten between, or when spread over the bed, five inches apart, and about two in depth.

Annuals, where they may have come up too thick, should be slightly thinned, and by the end of the month a few twiggy branches, as spruce fir, may be struck amongst them, to protect them.

Antirrhinums (Snapdragon).—Allow the young plants from cuttings to remain protected until spring; the old plants need no protection; do not cut them down until March.

Aquilegia (Columbine).—Transplant to where they are to flower; they are worthy of being more cultivated, and will grow almost anywhere.

Auriculas.—Set these into the frames at once, if not done; give air freely, and water moderately; suffer no cutting winds to strike them.

Bulbs of every sort may be put in now with safety and advantage; by strewing a little sand below each bulb, they lift cleaner, and are not so liable to damp.

Calceolarias.—Lift a few of the most handsome, to preserve for central or conspicuous places; put them in a soil of peat, cowdung, and loam, equal parts, adding a little sand; place them in a cool and shady part of the green-house or frames.

Campanulas (Canterbury bells).—Pot off some of the most handsome, of such as *C. pyramidalis* and *C. grandis;* also the low growing kinds, as *C. garganica, C. Barrelieri,* and *C. carpatica,* &c.; secure a good stock of each, and keep them in cold frames.

Carnations may be planted out where they are intended to flower: pot the fine sorts in leaf-mould and loam, and put them in frames; air freely, and water sparingly.

Clematis and other deciduous climbers must be partially thinned and nailed; this will mature the wood more fully; defer the final dressing until spring.

Chrysanthemums. — Fill the most conspicuous beds, and where they will be easily protected at night; plunge the pots. Those in the shrubbery may be slightly protected where exposed.

Crocus.—Plant in patches, or in rows quite near the box or edging; a few may be planted in beds; use a soil of loam, decomposed dung, and sand; put them about three inches apart, and ten between the rows.

Dahlias.—Take the roots up the first dry day after frost; clean, and have them all properly named or numbered. They will keep in a cellar or loft, below the greenhouse stage, or pitted as potatoes; perhaps it is best to have them covered with dry sand.

Evergreens may be transplanted wherever it is desirable; water them well.

Fuchsias.—The choice sorts may be lifted and kept in the greenhouse; cover up those left in the ground by the end of the month: it is worth trying to preserve the old shoots by wrapping them close with hay-bands, or covering well with spruce branches.

Hepaticas.—See that they are now in good order, otherwise the bloom will be deficient; have the ground stirred about them; they look best in patches in the borders.

Hyacinths.—Trench in a good portion of well rotted cow-dung amongst a loamy soil, which together may be about twenty inches deep; plant about eight inches apart, diversifying the colours; a covering of three inches is sufficient.

Jasmines and Honeysuckles. — Partially dress the old plants; plant in nursery rows, or in their final places, the young rooted plants.

Jonquils.—Plant in large masses, or in beds, in sandy loam, and rotten manure, or leaf-mould, two inches or so in depth, six inches between the bulbs, and the rows a foot apart.

Irises delight in a loamy moist soil, a little shaded; dig or trench in previous to planting a good portion of decomposed cow-dung.

Ixias require protection from the heavy and continued rains; give them a dry but not a confined situation, and a rich loamy soil, with a little sandy peat, and leaf mould.

Mignonette.—That being kept in frames, must be often looked to; air freely, and guard against the caterpillar.

Mimuluses are mostly hardy; but by taking up a plant or two of the good sorts, they are more easily increased in the house; give air plenteously.

Narcissus.—Plant largely of these, in good strong loam, and six or eight in a patch.

Pansies.—Pot off the rooted cuttings, and keep them in frames; loam and dung, and good drainage is all they require. The old beds may be dressed for the winter.

Picotees.—Pot off the rooted layers and cuttings, and put in a frame; water very little, and give air daily.

Pinks.— Plant out in nursery rows, to bed early in spring.

Pinus.—Those in pots may be taken in; and prepare to protect the most tender sorts that are planted out.

Primroses and Polyanthuses are found to do better exposed than with the most careful pot treatment; but those tender and beautiful varieties which are kept in pots should be freed from all dead leaves and slugs, and air given night and day.

Ranunculus. — Plant in beds six inches apart; give them a rich open soil, as sandy loam and cow-dung, well decomposed.

Rockets will repay the attention of being kept from the continued rains; those which have been struck should now be potted off singly and kept in frames.

Roses.—See that the standards are securely tied, the extravagant growths shortened, and the very tender dwarfs taken up and put in frames. Preparation should be made for slightly protecting the tender sorts, with such materials as spruce and laurel boughs, dry fern, &c.

Stocks.—A few may be planted out in sheltered and dry situations; but the chief stock must be preserved in frames, giving them plenty of air.

Sweet Williams.—Plant out in masses; and if in the shrubbery border, let them extend a yard or so in diameter; they will grow anywhere.

Tulips.—Make up a bed of two feet of turfy loam and decomposed manure; at the bottom have a layer of rotten cow-dung; the bed should be well raised to make allowance for its subsiding. This being done, remove as much soil aside as will cover the bulbs;

three or four inches, and plant them six inches apart. To keep each root in its place, it is as well to press in the bulb and cover it with a cone of soil; have them all arranged as you would exhibit them, and plant them exactly so. Plant the common sorts in patches throughout the borders.

Violets.— Give a thorough cleaning and stir up the soil amongst them: the chief store should be in frames; these should also be cleaned and aired abundantly.

WINDOW GARDENING.

As the nights become cold, all tender plants must be taken in-doors in the evening, and not be returned again to the balconies or window sills until the morning frost is entirely gone. The supply of moisture to all plants should be gradually reduced; this is especially necessary with such as lose their leaves, or are of a succulent texture; such should also be kept as near the light as possible. Where there is no greenhouse or pit to obtain a few fresh plants from occasionally, one or two should be bought as wanted to fill up vacancies. Indeed, in large towns this would be the least troublesome way at all seasons, as few window plants will repay any but an enthusiast for the expense and trouble of keeping them through the winter.

Bulbs, such as hyacinths, crocus, &c., should be placed in glasses or pots if not done last month; and, in that case, a second lot should now be put in. Place those in water in a dark cupboard, or similar place, but not in too warm a situation, or they will start but weakly.

Begonias must be watered very sparingly, giving little or none to such as are in or near a dormant condition.

Camellias.—Water very carefully, but sufficiently to prevent the roots from ever being dry: keep them in a light airy situation.

Cinerarias.—Continue to shift as requisite until they are in convenient sized pots, and water regularly and rather copiously, using a little manure water about once a week, except the weather be very damp and cloudy.

Fuchsias. — Gradually reduce the supply of moisture as they go out of flower, and let them go to rest. Shorten in the smaller shoots, and put them by for the winter, in a place where they will be safe from frost, and where they will not become too dry.

Geraniums.—Those which are past flowering may receive similar treatment to the fuchsias, but they should not be cut. Protect them carefully from frost, but give them as much air as the weather will permit.

Myrtles, and similar evergreens, should be kept as near the light as possible, in an airy place. Water regularly, and keep the foliage free from dust and dirt.

Roses. — Such as are not in an active state should receive but little water, but any of the Chinese or related sorts which may be growing, may be encouraged by being placed in a warm situation and watered regularly: give air freely to all.

Primulas.—Shift when necessary, paying attention to the drainage and to the watering. Keep them rather close for a week or so, and then give air freely when they commence growing again.

Violets.—Keep these in a dry airy place, and water only so much as to keep the soil just damp. In potting them up from the open border, use a very sandy loamy soil.

Wardian Cases.—These may be made a very interesting feature for winter decoration, as they may consist of single bell-glasses of various sizes for mosses and lycopodiums, or of any larger dimensions for larger plants, or to suit any particular situations. Even in the smallest, artificial rock-work may be introduced, leaving holes in which to insert the plants. In addition to the plants mentioned above, ferns, dwarf cacti, mesembryanthemums, sempervivums, haworthias, and all the smaller species of succulent plants may be used; and by judicious grouping—never using ferns or such-like plants in the same case with succulents—many combinations of strange forms might be effected. At this season water must be used with great caution, especially to succulents.

PITS AND FRAMES.

The principal operations will consist in preparing proper protection for these structures against frost, in airing, shutting up early, and in the careful application of water.

Annuals.—Shift any that may require it early in the month, and get them permanently arranged for the winter. Give air constantly, by taking the lights quite off on fine days, and tilting them in wet weather, and at night as long as the cold is not severe. Water freely in fine weather, but reduce the quantity towards the end of the month: less water will be required if the pots are plunged in coal ashes, or similar material.

Half-hardy Plants, as calceolarias, petunias, verbenas, &c., should be permanently arranged, but not plunged, the great difficulty of keeping them consisting in keeping them dry enough in damp weather. Give all the air possible during favourable weather; and if the frames are heated by hot water or otherwise, and the weather prove very damp towards the end of the month, a little fire should be lighted in the day-time occasionally, to dry the pits and plants, the nearest of the latter being in the mean time removed to a safe distance from the pipes or flues. Great care must be taken in the use of water, especially in dull weather; very little should be used at a time, but the plants should often be looked over. Pick off all bloom, and stop the shoots of any plants which keep growing, so as to cause them to form bushy compact heads; and keep them near the glass, to prevent their being drawn.

Forcing-pit.—Maintain a temperature of about 60 degrees by day, or rather more with sun heat; and let it fall to about 50 degrees at night. Give air freely in fine weather, even if the above heat be not quite maintained; and water regularly. As this is the time when it is necessary to begin to force flowers for Christmas, the requisite plants, in proper quantities, should now be introduced. Roses, lilacs, Gueldres roses, and various other hardy deciduous shrubs, should be placed at the coolest end, and the supply of water gradually increased. Rhododendrons, azaleas, and other American plants, should also be introduced and kept moist. A few pelargoniums should also be forwarded in the same way,—taking care they have no green fly about them, as those insects soon multiply in the congenial atmosphere of this structure. Dutch bulbs, if well rooted, should also be brought in towards the end of the month.

THE GREENHOUSE.

Temperature.—From 60 to 65 degrees by day; and about 45 degrees by night.

Ventilation.—Give air freely on all favourable occasions, leaving a little on all night, unless the external temperature fall below 40 degrees, or the weather be wet.

Watering.—Let this be done in the morning, and the syringing also, as long as the fine weather permits it to be done. Decrease the quantity of water to the plants generally, and avoid spilling it about the stages and floors.

Potting.—Continue to shift any free growing plants that may require it, being very careful with the drainage; and water sparingly until the plants are progressing again.

Soils.—Continue to take advantage of all opportunities to collect desirable ingredients for composts; and if not previously done as collected, ridge up all the heaps so as to expose as little surface as possible to heavy rains.

Dressing.—Continue to clean and stake the plants as they are brought in, previous to staging them.

Insects.—Never trust too implicitly to the plants being free from insects; examine them often, and apply the necessary remedy immediately the intruders are detected.

Aloes, and succulents generally, should have very little water, but they should not be allowed to shrivel, as that would weaken them very much, and lead to their starting into growth before the proper time.

Agaves, and large succulents, should be treated in a similar way, receiving even less water in proportion, and being kept in a cooler part of the house.

Alströmerias.—Keep these perfectly dry and cool; a back shed, if not rendered too hot by a fire-place in it, will be a suitable place to store them.

Annuals.—Shift such of these as require it, and water regularly and rather copiously. Stake the taller growing sorts in time, before they get unsightly.

Azaleas.—Keep a few of those which flowered first last season, at the warmest end of the house; and water regularly and very carefully: the main stock should be kept cooler, and also regularly damp at the root.

Calceolarias.—Shift such as require it, and bring those intended for winter flowering steadily forward, using liquid manure occasionally.

Camellias.—Keep a free circulation of air among the plants, and water regularly, so as to keep the earth moist but not too wet. A few of the most forward plants may be placed in a warmer situation, so as to excite them very gradually.

Cape Bulbs, as ixias, gladiolus, &c., should be kept dry and cool, but if any commence their growth, pot them, and place them in a cool pit or frame.

Cephalotus follicularis (New Holland pitcher-plant).—Continue last month's treatment, lessening the supply of moisture as the days shorten, and the weather becomes cold and damp.

Cinerarias.—Shift these as they advance, and continue to stop such as are wanted for spring flowering; water freely, occasionally with manure water.

Chrysanthemums.—Stake and tie out these, and shift any that require it. They should all be got into the house, or under good cover, and be regularly and freely watered, using liquid manure about twice a week. Wherever placed, a complete circulation of air must be maintained among them.

Crassulas, and allied plants, as sempervivum, should be kept dry, using no more water than sufficient to prevent them from shrivelling.

Cyclamens.—Re-pot any that are showing signs of growth, using a compost of peat, sand, and loam, in nearly equal quantities. Put them in a warm place and water sparingly at first.

Epacris.—Keep the soil regularly moist.

varying in this respect as little as possible, and allow free ventilation among the plants.

Ericas.—Maintain a thorough ventilation, and cool temperature among the plants, watering with the greatest care, so that the roots never approach dryness on the one hand, or become soddened on the other. If not done, seeds may be sown now, and the pots placed on a shelf near the light; the soil must be kept very regularly moistened.

Fuchsias.—Gradually lessen the allowance of water, and when all the leaves are off, shorten the shoots so as to allow the pots to stand close, and out of the way; give them only moisture enough to keep the stems from quite drying up. Plants so treated previously could be started into growth at any period.

Gompholobiums, and slender creepers, should be very carefully attended to, keeping the roots just moist, and the plants in an airy situation.

Haworthias, Apicras, &c.—Keep them on an airy warm shelf, giving them just sufficient water to keep them from shrivelling.

Helichrysums.—Water very sparingly, and guard against drips from the roof, or stagnant water.

Leschenaultias.—Water very little, and see that it passes off freely: keep them in a warm airy place, and guard against damp.

Lilium japonicum (Japan lily).—Pot these, if the bulbs show signs of growth, and keep them very cool, using little water until they advance in growth.

Mignonette.—Water carefully, and keep the plants in an airy place, to avoid damp. Allow the most of those trained into a shrubby form to grow away to flower; a few may still be stopped to succeed the others.

New Holland plants, as acacias, hoveas, bossiæas, &c., should be watered cautiously, so as to avoid extremes; a perfect ventilation should be maintained among the plants. The smaller sorts should be kept as near the glass as possible.

Orange trees should be got into their winter quarters early in the month, if not done previously. See that the drainage of all is perfect before they are finally arranged, and apply water at such a rate as to keep the roots regularly moist.

Oxalis.—Keep the bulbous species dry till spring, and give the tuberous stemmed sorts very little water—only enough to keep them from drying up.

Pelargoniums.—Shift where necessary, and stop and tie out those intended for late spring flowering as they advance. Water sufficiently to keep the soil in a regularly moist condition, using liquid manure occasionally to the most advanced plants. Keep up a free circulation of air to prevent spot and mould. Pot off well-rooted cuttings, keeping them rather close until their roots have taken fresh hold of the soil. Let seedlings have a warm situation; but do not water them quite so freely as the others.

Primulas.—Shift as often as necessary, encouraging those first wanted by applying a little manure water occasionally; pick out the flower stems of such as are meant for late flowering, as soon as they can be laid hold of: a cool airy place is still desirable for them.

Proteas, Banksias, Dryandras, &c.—Maintain a free circulation of air about these, and use only enough water to keep the soil just moist.

Rhododendrons.—If any of these are still under temporary protection, house them early in the month: place them in an airy part of the house, and keep the ball of roots constantly moist.

Roses.—Prune any pillar or other fixed plants before the house is kept closed in consequence of the weather, so as to excite a premature growth; cut back to a well ripened bud, which will resist a closer atmosphere for a longer time than the more sappy extremities of the branches.

Salvias.—Cut in such as are out of bloom, and reduce the water so as to give them a gradual rest. Keep those in perfection well supplied with moisture, occasionally using liquid manure, and place them in the warmest part of the house.

Stapelias.—The most of these will now be in flower; and if desirable to lengthen the period of their duration in that state, the plants should be slightly shaded. Keep them just moist, but gradually withhold water as they go out of bloom.

Tropæolums.—Pot the tubers as they show signs of growth, using a sandy loam, with sufficient good leaf mould to make it rather light. Place the plants in a cool airy place fully exposed to the light; and at once fix the intended trellis, and train the shoots as they advance.

THE CONSERVATORY.

Temperature, from 60 to 65 degrees by day, and about 50 degrees by night.

Ventilation.—Take advantage of all opportunities to give plenty of air, but close early in the afternoon, so as to leave the house warm.

Watering.—Restrict the use of moisture as the weather changes; and leave off syringing even in the morning when the weather turns cold or damp. Avoid making any damp about the floors as much as possible.

Arrangement.—Continue to vary the grouping as much as possible with the flowering plants; the larger specimens are, of course, in a great degree stationary. Much depends on individual taste here, both in the arrangement of colours and of forms; but it is merely necessary to mention these points in relation to the surrounding objects, to see what a wide field is here opened for the display of correct judgment.

General Directions.—Attention to the strictest neatness has been reiterated so often, and is so integral a portion of conservatory management, that it need only be hinted at here. If the weather prove very damp and gloomy, it will be necessary to light fires for the purpose of drying the house; this should be done on a fine morning, when the sashes can be freely opened to assist in the dispersion of the superfluous moisture; but the fire should be done with early in the afternoon, so as not to leave the house too warm at night when shut up. Be very cautious in applying fires in weather when the sashes cannot be opened.

THE PLANT STOVE.

Temperature, from 65 to 75 degrees by day, and 55 to 60 degrees by night.

Ventilation.—Admit as much air as practicable, having in view the above scale of temperature. Shading may be dispensed with as soon as the very bright hot weather is past.

Watering.—Be careful to apportion the moisture to the state of the respective plants, whether they are at rest, or in a more or less active state of growth. Water and syringe only in the morning, slightly damping the pipes and floors at night.

Potting.—Little shifting will require to be done at present; and as little as possible should be attempted. Clean and renew the surface of the soil in the pots where necessary.

Insects.—Lose no opportunity to thin the scale and white bug especially, if they are present, while the plants are dormant, and the shoots firm and hard, so as not to be so easily damaged as when in a growing state.

Achimenes.—Dry off the scaly roots as the tops decay, and keep them in a comparatively cool place until spring. If any are still growing on for winter flowering, keep them warm and rather moist, syringing twice a day to keep down red spider.

Allamanda, *Beaumontia*, *Echites*, and all strong growing climbers, should be gradually brought to a state of rest, by a further restriction of the supply of water, and thus be induced to form and perfect their flower buds.

Alpinias, *Hedychiums*, and other reedy plants, should be reduced to a complete state of rest by gradually exposing the roots of such as have quite lost their foliage to a dry atmosphere, by raising such as are sunk in tanks or moist ground, but not so that they may be too much shrivelled up suddenly.

Aphelandras, *Justicias*, *Ruellias*, &c.—Shift such of the winter flowering plants as require it, using water with care, especially just after re-potting: others past their prime should be rested by the ordinary means.

Amaryllids.—Pot only such as are really showing bloom, and bring them forward very gradually. Those which retain their leaves all the year should receive just so much water as to keep them from absolutely suffering.

Begonias.—Encourage those in an active state by judicious watering and warmth; and keep the dormant ones in a cool dry place.

Burchellia.—Keep cool and at rest, by only supplying sufficient water to keep the plants from drooping.

Cacti.—If not removed before, take them from their temporary shelter, and place them in a cool airy part of the house, giving them little or no water. Place a few plants in heat, and as they advance in growth, apply moisture more freely. If a succession is desirable, introduce a few to a warmer position about the middle, and others again at the end of the month.

Cinnamomum (Cinnamon tree).—Apply water only in such quantities as to keep the plant from retrograding, and keep up a steady heat.

Clerodendrons.—Reduce the supply of water, and gradually get the plants to rest. Those in a dormant state may be excited in succession, so as to have some in bloom all the summer.

Climbers.—Regulate such as are still advancing; but endeavour to rest all by withholding moisture, and keeping a drier atmosphere about the plants.

Daturas.—Thoroughly rest such as are out of flower; and gently encourage those that are still in a growing state.

Erythrinas.—Get the strongest plants into a state of rest if not so already, and keep them cool and dry.

Euphorbias.—Keep the succulent sorts dry and rather warm; and the leafy kinds dry, or gently growing, as the case may require.

Ferns.—Guard against stagnant air and water, and keep them free of decaying leaves.

Gardenias.—Let the main stock rest in a cool airy situation; and put a batch into heat, to flower early. Those in flower should be kept cool, to preserve the bloom.

Gesneras, *Gloxinias*, &c.—Dry off the tubers of the first as the plants go out of flower, reducing them gradually to a state of rest. The second should also be rested, but ought never to be allowed entirely to lose their leaves.

Hippeastrums, *Crinums*, *Pancratiums*, &c.—Restrict the supply of water as the plants decline, but never suffer them to lose their leaves entirely at any season.

Ipomœas.—Clear away the annual species as they decay, and prune the others as they require.

Ixoras. — Keep them cool, with merely enough water to prevent the roots from being dried up.

Jasminums, Rondeletias, Brunfelsias, &c. —Treat according to the various stages the plants may be in; those in flower requiring an increased supply of moisture.

Lantanas.—Bring them to a state of rest as they pass their prime; and cut them in closely before they make new growth.

Luculia gratissima.—Be careful in applying water after the plant shows signs of decreased vitality.

Lycopodiums.—Bring these nearer to the light, and in a less humid situation as the days draw in.

Malvaceous Plants, as hibiscus, should be limited in the amount of moisture allowed; and as soon as they have done flowering, care should be taken to rest them as much as possible.

Manettias, and other tender climbers, should be gradually rested by shortening the supply of water and heat.

Melastomas should be kept in a warm situation; and the amount of moisture supplied should be reduced.

Melo-Cacti should be kept in a warm dry airy place, with no more water than to prevent their losing bulk.

Musas.—Keep warm, but greatly reduce the supply of moisture. If in fruit great heat should be applied, gradually lessening the amount of water as it ripens.

Nepenthes (Pitcher Plant).—Maintain a strong heat and damp atmosphere; the latter can be done with less water than previously.

Nymphæas (Water Lilies).—Continue the resting process by shortening the supply of moisture about the roots, and by rising them partially or entirely above the surface of the water in which they have been growing.

Palms. — Reduce the temperature as the days shorten, but do not use so much water; and have recourse to fire heat to expel damp, in case of long-continued wet weather.

Thunbergias.—Clear away the annual sorts as they fade; cut in the branches of the others, and shorten the supply of water as they pass their prime.

Vincas.—Encourage those advancing for autumn and winter blooming; and forward others for succession.

THE ORCHID HOUSE.

Temperature.—The warm house for the Indian species, 80 degrees by day, 70 degrees by night; the cool or Mexican house 70 degrees by day, 60 degrees by night, with a gradual diminution as the season draws in. Take to fires betimes, to meet the decreasing temperature, but apply artificial heat very gradually, and carefully guard against any excess during the night.

Ventilation. — Admit air very cautiously and in very small quantities, closing the house early in the afternoon: it is, however, desirable to admit some, if possible, daily.

Watering.—Water very cautiously, and be careful that none lodges at the base of the young leaves, as in many species the plants are apt to rot under such circumstances. Syringe very little, except where plants are growing; and be cautious even then. Never use any other than tepid water.

Insects.—Look narrowly after slugs, snails, and woodlice; as the weather becomes colder, they are very apt to take to such good quarters as this house affords, and do a great deal of injury in a short time.

Potting.— Continue to shift any plants entirely at rest, where it may be necessary to do it: but except for the really terrestrial species, little else seems necessary than a plain block of wood, or very slight basket.

Shading may be taken off entirely, choosing a dry day for removing it, so that the material may be stored away in a properly dried state until again wanted.

Soils.—Collect whatever may be thought necessary as opportunities occur. It should always be moderately dry and slightly warmed when used.

Imported Plants.—Any not yet in a growing state should be kept rather cool, especially those from the interior of Mexico. It will be better to keep such as are fresh and plump until the spring, than to start them at this time, when they would have to bear up through the whole winter: dryness and coolness are the conditions for maintaining them in a resting state.

Aërides, Saccolabium, and Vanda.—If not already resting, try to get these into that state as early as possible, and then keep them rather dry and cool.

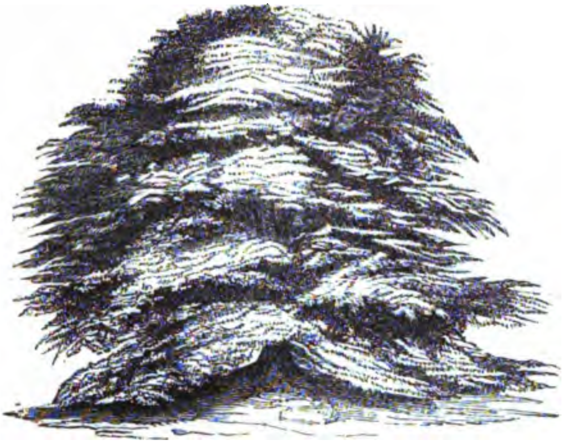
Cymbidiums.—Any that are coming into flower should be removed to the conservatory, where they will last a long time.

Cattleyas.—Assist these to perfect their growth, and afterwards remove them to the coolest house, and keep them dry.

Dendrobiums.—Persevere with those in a dry state until they show bloom, when they should receive a little more moisture.

Oncidiums.—Such as are growing should be kept steadily on, but do not syringe them much in dull weather.

Stanhopeas.—Those which have finished their growth should be removed to a cooler situation. Supply the growing plants freely with heat and moisture.



CONIFERÆ.—THE CEDRUS, OR CEDAR.

CEDRUS, *Barrelier* (the Cedar).—Derivation doubtful, probably from Kedron, or Cedron, a rivulet in Syria, on the banks of which the cedar trees grew in Biblical times. —Evergreen trees.

Cedrus Libani, Barrelier (Cedar of Lebanon).—Leaves tufted, straight, slender, evergreen, persistent, of a dark grassy colour, one inch in length. Cones from three to five inches long, erect, rather oblong, very obtuse, with broad, close-pressed, leathery scales.

A tree of Syria, remarkable for the diversity of form which it assumes, frequently grand and towering, yet often a huge heap of verdure, and sometimes, indeed, sending out large roaming branches trailing on the ground. It has a depth of shade which no other tree possesses: it is solemn beyond any other ligneous object; and, in sacred historical remembrance, it is the greatest of all trees. It is one of those few objects which will never be displaced by any new comers, for in its better aspects it scarcely admits of any rivalry. It is not reserved for us of the present day to be the first to praise it; for ever since it rose on the mountains of Syria, with its great, flattened, hawk-like wings, sharp against the clear sky, it was aptly pronounced to be the 'excellency of Lebanon." There were those who saw it from the holy city who ever afterwards had loftier ideas of the God of Nature; and lest any one should suppose this to be a mere piece of fancy, it is only necessary to refer to that well-chosen and fervent request of Moses, who had a strong desire to see the mount which was then so beauteously adorned with its cedars: "I pray thee," he says, "let me go over and see the good land that is beyond Jordan; that goodly mountain, *and Lebanon!*"

As usually beheld in this country, the cedar is a spreading, majestic, solemn-looking, evergreen tree. Even in level countries, such as Norfolk, many parks and pleasure grounds are by the aid of it invested with considerable grandeur. Houghton park, once the seat of Walpole, though as flat as a bowling-green, is a striking instance of this fact. Around London it has been planted extensively; and every one who is at all concerned about trees, knows the many magnificent specimens to be found in that district. At Chelsea, Syon, Claremont, Whitton, Pepper Harrow, Chiswick, and many other places, it has put on all its characteristic beauty, equalling some of the famous cedars of old. But why should it be kept so long as one of our garden *elegancies?* No one can object to it as a suburban tree; nay, it is highly appropriate in such places; but it might have been long since, at the suggestion of the landscape gardener, darkening many of the steep and cloudy mountains of the North; such of them at least as are in the vicinity of residences. In the more distant parts of country seats, where rugged scenery abounds, this tree might be made to command astonishment and reverence where merely a pleasing idea is at present excited. In old age, and when in masses, the darkling grandeur of the cedar in the neighbourhood of rocks, and contrasted with lighter folinge, reaches to the sublime, and certainly forms one of the most striking combinations to be found amongst inanimate objects. If we except the Highland pine (*Pinus sylvestris horizontalis*), no tree has the slightest pretension to be reckoned equal to it in dignifying any given spot; but with some other trees, it is apt to be badly misplaced by the *uninitiated*. There is a scene, for instance, at Sluie, on the banks of the Findhorn, in the north of Scotland, which, with a few hundreds of cedars, full-grown and grouped judiciously, might be made to exhibit a picture of sylvan grandeur, such as could not be anywhere surpassed; for throughout that district there is every other element to distinguish it—wood, water, high rocky cliffs; and, from some points, an almost boundless view. Other districts in Scotland present most eligible situations for the planting of this tree, such as the banks of the Clyde; and indeed every estate throughout Britain containing uneven surfaces, presents, more or less, the proper sites for this celebrated object. Let it be understood, however, that to plant these trees in belts, or in common woodland fashion, without reference to the effect they may have from the chief point of view, is disgusting. The cedar is not by any means indigenous to Britain; and if it rise anywhere in masses, it is well known that it does so entirely by art; it ought, therefore, to be in keeping with the surrounding scene—an adjunct to the chief object not far distant, viz. the mansion. If a hill side be seen overlayed with cedars, one would naturally look around for the cause which led to this costly garnishing, and if none were discovered, the conclusion would be that their being there formed no part of a landscape design, but the mere freak of a questionable fancy. All ornamental planting, therefore, should have a strict reference to the effect it may produce from the principal point of view.

Independently of the intrinsic merits of this tree, its descent and history confer upon it a character which will always recommend it to the planter. The first account of it occurs in the Old Testament, from which it is abundantly evident that in Biblical times it formed the boast of Syria. What its peculiar effect was when viewed upon Lebanon can be only arrived at from the expressions which occur regarding it; and these are certainly numerous and striking. Thus, when compared by David to the attainment of the righteous, it is said: "He shall flourish like the palm-tree; he shall grow as the cedar in Lebanon." And again, to break this lofty and ponderous tree, and shake the enormous mass on which it grows, are figures which the inspired Psalmist selects in expressing the power and majesty of Jehovah: "The voice of the Lord breaketh the cedars; yea, the Lord breaketh the cedars of Lebanon. He makes them also to skip like a calf: Lebanon and Sirion like a young unicorn." And finally, we find the prophet Zechariah referring metaphorically to this tree, whilst descanting on the destructive operations of the Roman armies, under the command of Titus Vespasian, against the nation of the Jews, when the princes and rulers were slaughtered, and the city and temple reduced to ruins: "Open thy doors, O Lebanon, that the fire may devour thy cedars; howl, fir tree, for the cedar is fallen; because the mighty is spoiled: howl, O ye oaks of Bashan; for the forest of the vintage is come down."

But the interest attached to this tree does not end with it in its living state. The fancy must be transported to the cedar-galleries of Jerusalem, in the formation of which it was employed to the exclusion of all other sorts of wood. Naturalists and commentators, it is true, have some doubt if our cedar of Lebanon be the tree referred to so frequently in the Bible, because the wood grown in England is coarse, and ill adapted, as they conclude, to be moulded and fashioned into those flowers and figures which distinguished the work of the temple. The difference of soil and climate, however, may account for all this; it being well known that trees which grow very slowly produce timber which is closer and more durable than that which is taken from those which grow rapidly. Besides, the words of the Psalmist, in allusion to the righteous, "they shall spread their branches like the cedar," preclude the possibility of any reference to a juniper. Whilst, therefore, it is certain that the timber employed in building the sumptuous temple and palace at Jerusalem, was of the cedar, and of the growth of Lebanon, there is much to favour the supposition that the wood usually called *cedar* amongst the ancients, and which was so universally invested with imperishable qualities, was some sort of Cypressus, Thuja, or Juniperus.

The general impression is, that this tree is confined to the particular mountain called Lebanon. This, however, is not the case; for Mr. Drummond Hay, the British consul at Tangier, lately discovered it on Mount Atlas; and specimens of the cones and branches of this tree have been sent from Morocco by P. B. Webb, Esq. Loudon thinks it probable that it will be found on the mountainous regions of the North of Africa, which botanists have not yet thoroughly explored.

As to extracting and sowing the seeds. The cones are ripe in November or December, and should then be gathered; for in some districts the squirrels will eat them, or rather the seeds, if allowed to hang longer. No degree of heat will cause the cones to expand, so as to let the seeds fall out, as in the case of the Scotch pine, so they should be treated in every respect as recommended for the larch cones; that is, laid upon a kiln for twelve hours, and subjected to a degree of heat not exceeding 120° Fah. During the time they are on the kiln they will require to be turned completely over three times, that is, at nine, twelve, and three o'clock, and then laid upon a hard uneven floor and thrashed to pieces. Where there is only a small quantity, the best and easiest way of getting at the seeds is by driving a piece of sharp iron through the centre of the cone, an operation which is considerably facilitated by steeping them in water for a few days previously. The best time for sowing is the latter end of April, either in the open ground, or in flat pots or pans laid in a frame without much bottom heat. The soil in either case should be of a light and friable nature, such as will not bind together, and should be kept moderately and uniformly moist until the plants appear, which will be in about four weeks after sowing. In the beds or pans, the plants may remain for two years, when they should be planted out into rich loamy soil in the open ground, not adding manure at the time, but into such soil as had been well manured for some previous crop. The plan of keeping them continually in pots is very bad, and is now being scouted in all the best nurseries. It is, however, to be remembered that, if the plants are not shifted at the end of every two years, they are fit only to be burned, the roots after that time becoming hard and fibreless. If treated in the open ground, as here recommended, the plants will reach the height of two feet in five years: those in pots, on the other hand, are eight years old before reaching this height. Plants two feet high are 1*s.* 6*d.* each, and those four feet high are 5*s.* each. Such plants are quite large enough to be planted out where they are intended to remain. The plan adopted by the late Sir George Macpherson Grant, of Ballindalloch, in Morayshire, was to plant the cedar in woods where large trees were growing at from twenty to forty feet distant from each other. So situated, the cedar seems to take at once an upward direction towards the air and light, the surrounding trees discouraging any unnecessary side branches, which forms the great evil of these trees when planted in open places.

Varieties.—The following may be distinguished:—

C. L. foliis argenteis (silver-leaved Cedar of Lebanon.)—This variety has its leaves of a silvery hue, which, however, it is apt sometimes to lose. The most perfect tree of this kind is on the banks of the Thames, at the Countess of Shaftesbury's villa, Richmond. It is not propagated by nurserymen.

C. L. nana is a small stunted variety, very prostrate in its habit, and never reaching beyond the size of a bush. Plants are sold at 7*s.* 6*d.* each. (1846.)

Cedrus Deodara, Roxburgh (Deodar, or Indian Cedar.)—Leaves in clusters, evergreen, acute, rigid, with a light glaucous bloom, longer than those of *C. Libani.* Cones in pairs, peduncled, erect, oval, four and a half to five inches long, and about three and a half inches broad; scales broad and closely pressed, frequently covered with resinous exudation.

A magnificent tree, well entitled to be considered one of the princes of the vegetable kingdom. It is a grand object, and graceful as well. Standing singly, it forms a magnificent pyramid, clad on all sides with ample pensile spray: in thickets, where its side branches are discouraged, it rises in a straight column to the height of 130 or 150 feet, the admiration alike of the savage and civilized. The Hindoos hold it in the greatest veneration, and throughout the elevated districts of Eastern India it seems to awaken in them some becoming ideas of the God of Nature. Their temples are near to groves of it, and, in many instances, it is not used by them except to burn as incense on occasions of the greatest solemnity.

The geography of this tree is fixed by travellers as comprehending the mountainous districts throughout the north of Hindostan, particularly the provinces of Almora and Kamaon, in Nepal, and as far as Cashmere, where the wood is in many cases intermixed with brick and mortar in the construction of houses. It is common on the hills surrounding Deyrah Dhoon, which is bounded on the east by the Ganges, and on the west by its mighty tributary the Jumna; and it is generally believed to prevail throughout the Himalayan range of hills.

The mode now generally adopted throughout Britain of propagating this tree will lead, in the course of a few years, to the greatest possible disappointment. Grafted on the common larch, which, as every one knows, is a deciduous plant of humble growth, this tree must become very much deteriorated. Who supposes that the humble larch is capable of sending out the vast, and strong, and deep anchoring in the soil which is necessary to maintain the lovely and gigantic pyramid which, on a proper foundation, this tree would assuredly become? The practice is a foolish attempt at cheating Nature; and planters should be on their guard to purchase those only which are, root and branch, directly descended from the sky-crowned trees of the Himalaya. Our mountains will grow proud of such, but the mongrel tribe had better at once give way to the true Scotch pine tree. Cuttings are infinitely better than inarched plants; but by far the best mode is to get the seeds. As elsewhere remarked, the rainy season, peculiar to India, commences in July and ends about the 20th of September, so that the best time to gather the Deodar cones is shortly after the fair weather has commenced, during the earlier part of October. In 1844, when the rainy season was over about a fortnight sooner than usual, and when the intensity of the sunshine which succeeded was unexampled, it was necessary to gather the cones three weeks sooner than usual, but, as a general rule, the first three weeks in October may be considered the best time to collect them. Considerable uncertainty prevails in this country as to the best mode of transmitting the seeds. Thus, Loudon states that the "seeds preserve their vitality when imported in the cones, but scarcely otherwise," an opinion which is very apt to mislead, for it is unquestionable that the cones, *of themselves*, will not retain the vitality of their contents. When cones are imported, they should be carefully coated over with resin, wax, or any other similar substance, to fill up the small interstices between the scales, and carefully tied down with cord so as to prevent the possibility of their expanding during the voyage. It should be remembered that, unlike those of the cedar of Lebanon, the Deodar cones are deciduous, falling to pieces when ripe with a mere touch of the hand; so that if the precaution of tying them should be omitted, they will be in pieces when they reach this country; and the probability is, that not one in a hundred of the seeds will vegetate. Calcutta is the sea-port for the Himalayan district, and a vessel from thence will take about six months to reach London. A much safer and more expeditious plan is to send the seeds in small packages by the Overland Mail; and in this case nearly all the seeds will vegetate. When the cones are collected, and the seeds extracted, those only which are firm and plump should be put up. The best way to pack them, is to place the clean seeds, along with a quantity of the chaffy wings which were detached from them, in a small wax-cloth, or oil-cloth bag, which is strong and excludes the air. To Calcutta, those small packages should be forwarded by Banghy; and as the average length of time occupied by the Oriental and Peninsular Steam Company's vessels is forty-eight days, January is the last month in which transmissions of the seeds should be made. All packages should be fully addressed to the parties in this country for whom they are intended, then forwarded to some agent at Calcutta, together with an account of the contents and value of each, and instructions to the agent to send the same *overland* to his London correspondent, who will pay the expenses of customs, clearing, &c., and forward them to their destination.

Simply as a timber tree, the Deodar is full of promise. Though, as already stated, it is held sacred in many districts, it is in others extensively used in the construction of buildings. It has been taken from the roofs of temples uninjured by the lapse of several centuries; and it may be safely asserted that its wood is as durable as that of the larch, whilst it is much easier to work, and not at all liable to twist and warp. A section of a trunk, nearly four feet in diameter, was sent by Dr. Wallich to Mr. Lambert; and in its polished state it has been compared to a slab of brown agate.

The nursery culture of this plant is exceedingly simple. The seeds should be sown in free loamy soil in April, in beds, *in the open ground*, and covered to the depth of one inch. The plants should remain for two years in their beds, when they will be fit to transplant into nursery lines in the usual way. The pot culture of the Deodar is now abandoned in the best nurseries; and, indeed, all the pines are now treated like the common Scotch fir and larch; that is, by transplanting them when necessary in the open ground. Plants are now sold at the following rates:—two years' seedlings, 4*s*. per dozen; strong plants, one and a half to two feet, 4*s*. each; and those from two feet to three feet high, at 20*l*. per 100. (1846.)

THE WILD SPECIES OF RANUNCULUS.

The character of the genus Ranunculus is thus explained by botanists :—

Calyx of five (rarely three) sepals, not elongated at the base. *Petals* five, sometimes more, with a nectariferous gland at the base, which is either naked, or covered by a scale. *Carpels*, not bursting, ovate, subcompressed with a mucronated apex, *collected into a globular or elliptic head.* Several species are natives of this country, some common in pastures, and familiarly known as buttercups : they are mostly acrid, and when bruised produce blister; but this acridity is destroyed by drying or by heat.

Ranunculus Flammula, Linnæus (lesser Spearwort).—Root fibrous; *stem reclined* and *rooting* at the base ; leaves ovate—or linear-lanceolate, *stalked;* carpels obovate, smooth, with a minute terminal beak. A herbaceous perennial, with numerous long fibrous roots ; the stems are creeping below, and erect and branching above, and grow from a few inches to two feet high, with numerous alternate leaves, which in the upper parts of the plant are linear-lanceolate, and at the base are ovate-lanceolate, with a long channelled petiole, dilated, and embracing the stem. The flowers are numerous, consisting of five roundish wedge-shaped, bright yellow petals : the carpels are obovate, "minutely pitted with a small point." Flowers from June to September. Found commonly in marshes and watery places. There are two varieties : one called *reptans* has a more procumbent stem, and is, altogether, smaller; this is by some considered as a species: the other, called *ovata*, has nearly all the leaves ovate. The plant is very acrid, speedily producing inflammation and blisters on the skin. The distilled water is said by Withering to be an emetic, more instantaneous and less offensive than sulphate of zinc ; and in his opinion preferable to any other emetic.

Ranunculus Lingua, Linnæus (great Spearwort). — Root fibrous ; *stem erect;* leaves elongate-lanceolate, acute, somewhat serrated, *sessile*, and clasping the stem ; carpels margined, minutely *pitted with a* broad *sword-shaped* beak. This is a herbaceous perennial, resembling *R. Flammula*, but altogether larger. The stem grows two, three, or even four feet high, and the leaves are sessile, and half embracing the stem. The flowers are not very numerous, but they are large—twice the size of those of *R. Flammula*—bright yellow, and handsome. Flowers in July. Found in wet marshy places, but rather rare, and chiefly met with in the north of England and in Scotland. A slight variety called *major* has the leaves broadly lanceolate.

Ranunculus ophioglossifolius, Villars (serpent's tongue Spearwort). — Root fibrous ; stem erect ; lower leaves *cordate-ovate, stalked*, upper ones oblong, sessile, stem clasping ; carpels obliquely ovate, margined, *tuberculated* with a short terminal point. An annual species, with a branching erect stem about a foot high, throwing out whorls of fibrous roots from its lower joints, and bearing numerous small flowers. The whole plant is glabrous. The beads of fruit are large in comparison of the size of the other parts of the plant. Flowers in June and July. Found rarely in Jersey in marshy spots (St. Peter's Marsh).

Ranunculus gramineus, Linnæus (grassy Crowfoot).—Root fibrous, *the fibres thickening towards the end;* stem erect, very smooth, with few flowers ; leaves linear-lanceolate, many ribbed ; carpels obliquely obovate, rugose, with a short revolute beak ; *nectary tubular.* A herbaceous perennial, with an erect stem from twelve to eighteen inches high, branching and bearing a few moderate-sized bright yellow flowers, with broadly wedge-shaped petals ; the root-leaves are linear-lanceolate, of a pale glaucous green, and the stem sometimes bears one or two narrow linear ones. Flowers in May and June. Said to have been found in North Wales, but a very doubtful native. Miller says in 1771, "We have not yet got it in England."

Ranunculus Ficaria, Linnæus (Pilewort, or lesser Celandine). — Root with *fasciculated* tubers ; stem leafy, single flowered ; leaves *cordate stalked*, angular ; *carpels smooth*, blunt. A herbaceous perennial, with numerous stems, each bearing one flower, and at the base several leaves which are spotted at top with black ; these stems grow six or eight inches high, and often produce bulbs in the bosom of the leaf-stalks : the calyx is usually of three pieces—sometimes five ; and the petals are usually eight in number (but this is variable) elliptic-oblong, acute, of a bright shining golden yellow, greenish at the back. Flowers in April and May. Found commonly in woods, pastures, and shady places about hedge banks. It is also called *Ficaria verna.* The leaves of this plant have the reputation of being a useful antiscorbutic ; and the root, which is composed of several oblong bulbs, when bruised and made into a poultice, is said to be useful as an external application to piles. Withering says the young leaves may be eaten in spring along with other potherbs.

Ranunculus auricomus, Linnæus (Goldilocks, or wood Crowfoot).—Root fibrous ; stem many flowered ; *radical leaves, reniform*, three cleft, notched, stem leaves sessile, digitate, with linear-lanceolate segments ; carpels downy, ventricose, with a slender hooked beak, three or four inches, and plant them six inches apart. To keep each root in its place, it is as well to press in the bulb and cover it with a cone of soil; have them all arranged as you would exhibit them, and plant them exactly so. Plant the common sorts in patches throughout the borders.

Violets.—Give a thorough cleaning and stir up the soil amongst them: the chief store should be in frames; these should also be cleaned and aired abundantly.

WINDOW GARDENING.

As the nights become cold, all tender plants must be taken in-doors in the evening, and not be returned again to the balconies or window sills until the morning frost is entirely gone. The supply of moisture to all plants should be gradually reduced; this is especially necessary with such as lose their leaves, or are of a succulent texture; such should also be kept as near the light as possible. Where there is no greenhouse or pit to obtain a few fresh plants from occasionally, one or two should be bought as wanted to fill up vacancies. Indeed, in large towns this would be the least troublesome way at all seasons, as few window plants will repay any but an enthusiast for the expense and trouble of keeping them through the winter.

Bulbs, such as hyacinths, crocus, &c., should be placed in glasses or pots if not done last month; and, in that case, a second lot should now be put in. Place those in water in a dark cupboard, or similar place, but not in too warm a situation, or they will start but weakly.

Begonias must be watered very sparingly, giving little or none to such as are in or near a dormant condition.

Camellias.—Water very carefully, but sufficiently to prevent the roots from ever being dry: keep them in a light airy situation.

Cinerarias.—Continue to shift as requisite until they are in convenient sized pots, and water regularly and rather copiously, using a little manure water about once a week, except the weather be very damp and cloudy.

Fuchsias. — Gradually reduce the supply of moisture as they go out of flower, and let them go to rest. Shorten in the smaller shoots, and put them by for the winter, in a place where they will be safe from frost, and where they will not become too dry.

Geraniums.—Those which are past flowering may receive similar treatment to the fuchsias, but they should not be cut. Protect them carefully from frost, but give them as much air as the weather will permit.

Myrtles, and similar evergreens, should be kept as near the light as possible, in an airy place. Water regularly, and keep the foliage free from dust and dirt.

Roses. — Such as are not in an active state should receive but little water, but any of the Chinese or related sorts which may be growing, may be encouraged by being placed in a warm situation and watered regularly: give air freely to all.

Primulas.—Shift when necessary, paying attention to the drainage and to the watering. Keep them rather close for a week or so, and then give air freely when they commence growing again.

Violets.—Keep these in a dry airy place, and water only so much as to keep the soil just damp. In potting them up from the open border, use a very sandy loamy soil.

Wardian Cases.—These may be made a very interesting feature for winter decoration, as they may consist of single bell-glasses of various sizes for mosses and lycopodiums, or of any larger dimensions for larger plants, or to suit any particular situations. Even in the smallest, artificial rock-work may be introduced, leaving holes in which to insert the plants. In addition to the plants mentioned above, ferns, dwarf cacti, mesembryanthemums, sempervivums, haworthias, and all the smaller species of succulent plants may be used; and by judicious grouping—never using ferns or such-like plants in the same case with succulents—many combinations of strange forms might be effected. At this season water must be used with great caution, especially to succulents.

PITS AND FRAMES.

The principal operations will consist in preparing proper protection for these structures against frost, in airing, shutting up early, and in the careful application of water.

Annuals.—Shift any that may require it early in the month, and get them permanently arranged for the winter. Give air constantly, by taking the lights quite off on fine days, and tilting them in wet weather, and at night as long as the cold is not severe. Water freely in fine weather, but reduce the quantity towards the end of the month: less water will be required if the pots are plunged in coal ashes, or similar material.

Half-hardy Plants, as calceolarias, petunias, verbenas, &c., should be permanently arranged, but not plunged, the great difficulty of keeping them consisting in keeping them dry enough in damp weather. Give all the air possible during favourable weather; and if the frames are heated by hot water or otherwise, and the weather prove very damp towards the end of the month, a little fire should be lighted in the day-time occasionally, to dry the pits and plants, the nearest of the latter being in the mean time removed to a safe distance from the pipes or flues. Great care must be taken in the use of water, especially in dull weather; very little should be used at a time, but the plants should often be looked over. Pick off all bloom, and stop the shoots of any plants which keep growing, so as to cause them to form bushy compact heads; and keep them near the glass, to prevent their being drawn.

Forcing-pit.—Maintain a temperature of about 60 degrees by day, or rather more with sun heat; and let it fall to about 50 degrees at night. Give air freely in fine weather, even if the above heat be not quite maintained; and water regularly. As this is the time when it is necessary to begin to force flowers for Christmas, the requisite plants, in proper quantities, should now be introduced. Roses, lilacs, Gueldres roses, and various other hardy deciduous shrubs, should be placed at the coolest end, and the supply of water gradually increased. Rhododendrons, azaleas, and other American plants, should also be introduced and kept moist. A few pelargoniums should also be forwarded in the same way,—taking care they have no green fly about them, as those insects soon multiply in the congenial atmosphere of this structure. Dutch bulbs, if well rooted, should also be brought in towards the end of the month.

THE GREENHOUSE.

Temperature.—From 60 to 65 degrees by day; and about 45 degrees by night.

Ventilation.—Give air freely on all favourable occasions, leaving a little on all night, unless the external temperature fall below 40 degrees, or the weather be wet.

Watering.—Let this be done in the morning, and the syringing also, as long as the fine weather permits it to be done. Decrease the quantity of water to the plants generally, and avoid spilling it about the stages and floors.

Potting.—Continue to shift any free growing plants that may require it, being very careful with the drainage; and water sparingly until the plants are progressing again.

Soils.—Continue to take advantage of all opportunities to collect desirable ingredients for composts; and if not previously done as collected, ridge up all the heaps so as to expose as little surface as possible to heavy rains.

Dressing.—Continue to clean and stake the plants as they are brought in, previous to staging them.

Insects.—Never trust too implicitly to the plants being free from insects; examine them often, and apply the necessary remedy immediately the intruders are detected.

Aloes, and succulents generally, should have very little water, but they should not be allowed to shrivel, as that would weaken them very much, and lead to their starting into growth before the proper time.

Agaves, and large succulents, should be treated in a similar way, receiving even less water in proportion, and being kept in a cooler part of the house.

Alströmerias.—Keep these perfectly dry and cool; a back shed, if not rendered too hot by a fire-place in it, will be a suitable place to store them.

Annuals.—Shift such of these as require it, and water regularly and rather copiously. Stake the taller growing sorts in time, before they get unsightly.

Azaleas.—Keep a few of those which flowered first last season, at the warmest end of the house; and water regularly and very carefully: the main stock should be kept cooler, and also regularly damp at the root.

Calceolarias.—Shift such as require it, and bring those intended for winter flowering steadily forward, using liquid manure occasionally.

Camellias.—Keep a free circulation of air among the plants, and water regularly, so as to keep the earth moist but not too wet. A few of the most forward plants may be placed in a warmer situation, so as to excite them very gradually.

Cape Bulbs, as ixias, gladiolus, &c., should be kept dry and cool, but if any commence their growth, pot them, and place them in a cool pit or frame.

Cephalotus follicularis (New Holland pitcher-plant).—Continue last month's treatment, lessening the supply of moisture as the days shorten, and the weather becomes cold and damp.

Cinerarias.—Shift these as they advance, and continue to stop such as are wanted for spring flowering; water freely, occasionally with manure water.

Chrysanthemums.—Stake and tie out these, and shift any that require it. They should all be got into the house, or under good cover, and be regularly and freely watered, using liquid manure about twice a week. Wherever placed, a complete circulation of air must be maintained among them.

Crassulas, and allied plants, as sempervivum, should be kept dry, using no more water than sufficient to prevent them from shrivelling.

Cyclamens.—Re-pot any that are showing signs of growth, using a compost of peat, sand, and loam, in nearly equal quantities. Put them in a warm place and water sparingly at first.

Epacris.—Keep the soil regularly moist.

varying in this respect as little as possible, and allow free ventilation among the plants.

Ericas.—Maintain a thorough ventilation, and cool temperature among the plants, watering with the greatest care, so that the roots never approach dryness on the one hand, or become soddened on the other. If not done, seeds may be sown now, and the pots placed on a shelf near the light; the soil must be kept very regularly moistened.

Fuchsias.—Gradually lessen the allowance of water, and when all the leaves are off, shorten the shoots so as to allow the pots to stand close, and out of the way; give them only moisture enough to keep the stems from quite drying up. Plants so treated previously could be started into growth at any period.

Gompholobiums, and slender creepers, should be very carefully attended to, keeping the roots just moist, and the plants in an airy situation.

Haworthias, *Apicras*, &c.—Keep them on an airy warm shelf, giving them just sufficient water to keep them from shrivelling.

Helichrysums.—Water very sparingly, and guard against drips from the roof, or stagnant water.

Leschenaultias.—Water very little, and see that it passes off freely: keep them in a warm airy place, and guard against damp.

Lilium japonicum (Japan lily).—Pot these, if the bulbs show signs of growth, and keep them very cool, using little water until they advance in growth.

Mignonette.—Water carefully, and keep the plants in an airy place, to avoid damp. Allow the most of those trained into a shrubby form to grow away to flower; a few may still be stopped to succeed the others.

New Holland plants, as acacias, hoveas, bossiæas, &c., should be watered cautiously, so as to avoid extremes; a perfect ventilation should be maintained among the plants. The smaller sorts should be kept as near the glass as possible.

Orange trees should be got into their winter quarters early in the month, if not done previously. See that the drainage of all is perfect before they are finally arranged, and apply water at such a rate as to keep the roots regularly moist.

Oxalis.—Keep the bulbous species dry till spring, and give the tuberous stemmed sorts very little water—only enough to keep them from drying up.

Pelargoniums.—Shift where necessary, and stop and tie out those intended for late spring flowering as they advance. Water sufficiently to keep the soil in a regularly moist condition, using liquid manure occasionally to the most advanced plants. Keep up a free circulation of air to prevent spot and mould. Pot off well-rooted cuttings, keeping them rather close until their roots have taken fresh hold of the soil. Let seedlings have a warm situation; but do not water them quite so freely as the others.

Primulas.—Shift as often as necessary, encouraging those first wanted by applying a little manure water occasionally; pick out the flower stems of such as are meant for late flowering, as soon as they can be laid hold of: a cool airy place is still desirable for them.

Proteas, *Banksias*, *Dryandras*, &c.—Maintain a free circulation of air about these, and use only enough water to keep the soil just moist.

Rhododendrons.—If any of these are still under temporary protection, house them early in the month: place them in an airy part of the house, and keep the ball of roots constantly moist.

Roses.—Prune any pillar or other fixed plants before the house is kept closed in consequence of the weather, so as to excite a premature growth; cut back to a well ripened bud, which will resist a closer atmosphere for a longer time than the more sappy extremities of the branches.

Salvias.—Cut in such as are out of bloom, and reduce the water so as to give them a gradual rest. Keep those in perfection well supplied with moisture, occasionally using liquid manure, and place them in the warmest part of the house.

Stapelias.—The most of these will now be in flower; and if desirable to lengthen the period of their duration in that state, the plants should be slightly shaded. Keep them just moist, but gradually withhold water as they go out of bloom.

Tropæolums.—Pot the tubers as they show signs of growth, using a sandy loam, with sufficient good leaf mould to make it rather light. Place the plants in a cool airy place fully exposed to the light; and at once fix the intended trellis, and train the shoots as they advance.

THE CONSERVATORY.

Temperature, from 60 to 65 degrees by day, and about 50 degrees by night.

Ventilation.—Take advantage of all opportunities to give plenty of air, but close early in the afternoon, so as to leave the house warm.

Watering.—Restrict the use of moisture as the weather changes; and leave off syringing even in the morning when the weather turns cold or damp. Avoid making any damp about the floors as much as possible.

Arrangement.—Continue to vary the grouping as much as possible with the flowering plants; the larger specimens are, of course, in a great degree stationary. Much depends on individual taste here, both in the arrangement of colours and of forms; but it is merely necessary to mention these points in relation to the surrounding objects, to see what a wide field is here opened for the display of correct judgment.

General Directions. — Attention to the strictest neatness has been reiterated so often, and is so integral a portion of conservatory management, that it need only be hinted at here. If the weather prove very damp and gloomy, it will be necessary to light fires for the purpose of drying the house; this should be done on a fine morning, when the sashes can be freely opened to assist in the dispersion of the superfluous moisture; but the fire should be done with early in the afternoon, so as not to leave the house too warm at night when shut up. Be very cautious in applying fires in weather when the sashes cannot be opened.

THE PLANT STOVE.

Temperature, from 65 to 75 degrees by day, and 55 to 60 degrees by night.

Ventilation.—Admit as much air as practicable, having in view the above scale of temperature. Shading may be dispensed with as soon as the very bright hot weather is past.

Watering.—Be careful to apportion the moisture to the state of the respective plants, whether they are at rest, or in a more or less active state of growth. Water and syringe only in the morning, slightly damping the pipes and floors at night.

Potting.—Little shifting will require to be done at present; and as little as possible should be attempted. Clean and renew the surface of the soil in the pots where necessary.

Insects.—Lose no opportunity to thin the scale and white bug especially, if they are present, while the plants are dormant, and the shoots firm and hard, so as not to be so easily damaged as when in a growing state.

Achimenes.—Dry off the scaly roots as the tops decay, and keep them in a comparatively cool place until spring. If any are still growing on for winter flowering, keep them warm and rather moist, syringing twice a day to keep down red spider.

Allamanda, *Beaumontia*, *Echites*, and all strong growing climbers, should be gradually brought to a state of rest, by a further restriction of the supply of water, and thus be induced to form and perfect their flower buds.

Alpinias, *Hedychiums*, and other reedy plants, should be reduced to a complete state of rest by gradually exposing the roots of such as have quite lost their foliage to a dry atmosphere, by raising such as are sunk in tanks or moist ground, but not so that they may be too much shrivelled up suddenly.

Aphelandras, *Justicias*, *Ruellias*, &c. — Shift such of the winter flowering plants as require it, using water with care, especially just after re-potting: others past their prime should be rested by the ordinary means.

Amaryllids.—Pot only such as are really showing bloom, and bring them forward very gradually. Those which retain their leaves all the year should receive just so much water as to keep them from absolutely suffering.

Begonias.—Encourage those in an active state by judicious watering and warmth; and keep the dormant ones in a cool dry place.

Burchellia.—Keep cool and at rest, by only supplying sufficient water to keep the plants from drooping.

Cacti.—If not removed before, take them from their temporary shelter, and place them in a cool airy part of the house, giving them little or no water. Place a few plants in heat, and as they advance in growth, apply moisture more freely. If a succession is desirable, introduce a few to a warmer position about the middle, and others again at the end of the month.

Cinnamomum (Cinnamon tree). — Apply water only in such quantities as to keep the plant from retrograding, and keep up a steady heat.

Clerodendrons. — Reduce the supply of water, and gradually get the plants to rest. Those in a dormant state may be excited in succession, so as to have some in bloom all the summer.

Climbers. — Regulate such as are still advancing; but endeavour to rest all by withholding moisture, and keeping a drier atmosphere about the plants.

Daturas.—Thoroughly rest such as are out of flower; and gently encourage those that are still in a growing state.

Erythrinas.—Get the strongest plants into a state of rest if not so already, and keep them cool and dry.

Euphorbias.—Keep the succulent sorts dry and rather warm; and the leafy kinds dry, or gently growing, as the case may require.

Ferns. — Guard against stagnant air and water, and keep them free of decaying leaves.

Gardenias.—Let the main stock rest in a cool airy situation; and put a batch into heat, to flower early. Those in flower should be kept cool, to preserve the bloom.

Gesneras, *Gloxinias*, &c. — Dry off the tubers of the first as the plants go out of flower, reducing them gradually to a state of rest. The second should also be rested, but ought never to be allowed entirely to lose their leaves.

Hippeastrums, *Crinums*, *Pancratiums*, &c. —Restrict the supply of water as the plants decline, but never suffer them to lose their leaves entirely at any season.

doubt that they have to endure greater hardships on the mountains of Mexico, than they do in our ordinary winters; but this has nothing to do with the question of acclimatation. We have all through maintained that it is impossible to alter in any plant its powers of endurance. The only way properly to ascertain a plant's powers of endurance is to gradually change its temperature, until it is placed in the open ground; and to select several positions, even those of different circumstances, as north, south, east, and west aspects, with a registering thermometer at each place. The conditions most favourable to a plant are those which involve the least change, and that change the most gradual. It will often be found, that when there is no protection, a plant under a south wall, or a south-west, will perish, while one in a northern or a north-eastern exposure will survive; the one never being so greatly excited as the other, is consequently never subject to such great changes, and hence its endurance. The plant placed in the coldest aspect, having no sun to act upon its frozen juices, gradually thaws; while that which is subject to the immediate operation of a hot sun, which frequently succeeds a frost, is often very suddenly acted upon. But there are circumstances under which plants may succeed better than they generally do, and among them there are certain conditions that can be supplied: for instance, gravelly bottom, good drainage, poor compost, shelter from the north-east winds, are all favourable to a plant that is susceptible of injury from cold; not that these circumstances alter the plant, but they change the nature of what it has to bear. The gravelly bottom is always warmer, the good drainage always tends to the same end, the poor soil keeps the plant from growing too rapidly, and the shelter is of the greatest consequence; but if, notwithstanding all these circumstances, the winter is severe enough to overcome them, the half hardy plant that would go through some winters will perish. It will bear no more hardship, after all that can be done for it, than it would have borne without so much coaxing, because all that has been done only changed the hardships it had to go through, and not the constitution of the plant itself.

But let us now consider how far, according to Mr. Johnson's notions, the offspring of tropical plants raised from seed may be *rendered* much more hardy than their parents. Now we deny that a seedling can be *rendered* more hardy than the parents; although we do admit that seedlings *may be* more hardy than their parents. Our opinions are founded on this one fact:—Among plants known to be tender, the dahlia, potato, and some other subjects, something has been done in the way of seedlings, and in a batch of many, some will be found affected by the frost more than others. Among brocoli, cauliflowers, and some other subjects, it is known that the seedlings will in some cases differ from the parent,—some will endure the winter better, some come earlier, some stand better, in short, it is not at all uncommon to see a visible change in many of the plants. The new varieties of peas, cabbages, cauliflowers, brocoli, turnips, melons, cucumbers, and all kinds of fruit, have been obtained from seed, and the constant variations to be found in seedlings from a known parent, show us distinctly that it is fair to hope that in a limited degree there may be a progeny somewhat more hardy than the parent.

We were once going through an immense piece of brocoli, after the extreme hard winter so often called Murphy's, when, on or about the 11th January, there was the hardest frost known in England. It was as difficult to find a bit of vegetable alive as if everything had been burned up. On this occasion there were (among a wreck of thousands of plants, which were rotten and perished and putrid,) two or three plants as strong and healthy as if there had been no frost; we remarked at the time they were valuable exceptions to the desolation around, and that their seed would pay more than the whole crop would have done. All that we could get out of the gardener was, that the family must have those three heads, and he could not save them; and so it was, the family or some part of it had noticed them and ordered them to be cut for dinner. The gardener would have lost an excellent sort, or rather three excellent sorts, for one was completely sprouting, one a rather dark, and the other a white head. Here was evidently hardier offspring than the rest of the seedlings appeared to be, and we can hardly doubt that in every description of plant it is possible to obtain plants hardier than the parent, though not very commonly so without hybridizing, as it is called, that is, impregnating or fertilizing a hardy kind of plant with one of the tender, and so producing hardy plants with the principal characters of the tender one. At all events, there is no denying that if seed be saved as carefully as possible, and seedlings raised from it, there will be found differences in the seedlings in foliage, in habit, in hardiness, and in other properties that render the plants more valuable; while, on the other hand, there will be discovered many much worse than the original.

So long therefore as variation is to be found in seedlings, as compared with the parent plants, so long there must be allowed a possibility for some to be more hardy than their parents; but we maintain that practically there cannot be an alteration made in the power of a plant to endure heat or cold. The same plant that has been tried down to the lowest degree of cold that it can bear, will, by gradual increase of temperature, be made to bear as much heat as ever it did; and by the same gradual plan of lowering the temperature, it may be brought back again to bear all it ever did bear of cold.

Nobody can dispute the ill effects of sudden transition from heat to cold, and *vice versâ;* but it applies alike to all plants, hardy, half hardy, tender, and tropical. The sturdy oak would be victimized as readily as the delicate orchidaceous plant, by the sudden change of temperature, and its nature would be nevertheless as little changed as if it had remained in its native forest.

We admit, however, that the constitution of a plant may be injured, that is, that a plant may be got into an unhealthy state, and by no means sooner than by sudden change of temperature; that it may, in fact, be so damaged as not to be recovered, but to linger on in ill health a considerable period, and perhaps eventually to die; but this does not make it a tender plant, it only renders it a sickly one. We have seen the constitution of a plant damaged by excessive propagation, and with great difficulty some of the progeny by cuttings recovered, but we have seen others that never recovered, and their cuttings and layers continued the same sickly, weakly character that distinguished the parent; but still the fact had nothing to do with the powers of the plant to endure cold or heat. A plant, whether tender or hardy, may be healthy, and it is on healthy subjects alone that we can place any reliance in the trial of what a plant can bear.

The question of acclimatizing plants, therefore, is only tenable if we put another construction on the word, and instead of using it as meaning the *making of a plant more hardy than it naturally is,* use it in the sense of *proving how hardy a plant naturally is,* for such is all we can do.

The first *Aucuba japonica* that ever reached this country would have stood out of doors just as well as the last; all that had to be avoided was sudden change, which no plant will bear. Every-day experience shows us, that sudden alteration of temperature is mischievous. If we want to force a rose or an American plant, we dare not take it into a hot stove at once, for they would fail; but first in a cold pit, then in a greenhouse, next in a moderately warmed pit, and lastly in the stove, they will do just as we wish them to do, and according as we hasten them, so do they come earlier; but when they are in flower, if they are brought suddenly into the cold, they would irrecoverably fade, so that we are equally called upon to reduce the temperature gradually; nevertheless the rose and the American plant will stand just as much cold as ever, so that we reduce their temperature by degrees. So much for acclimatizing.

THE AMATEUR GARDENERS' CALENDAR.

BY MRS. LOUDON.

OUR respect for the authoress induces us to hint very gently, that with due submission to her excellent taste in some things, we do not like her reasons for writing a new Calendar. The condemnation of other authors should be undertaken with caution; and it comes with an ill grace from a lady whose knowledge is anything but unlimited, and certainly not practical. We have not the slightest objection to the multiplication of Calendars; there is one that will outlive them all, and contains more and better information than any that have been published since, and Mrs. Loudon's condemnation does not read well with those whose sound practical experience enables them to appreciate between shadow and substance.

"Whenever I have taken up a Gardeners' Calendar myself," says Mrs. Loudon, "to see what was necessary to be done at any particular season, I have been perplexed, first with the multitude of directions that I have found, and next with being continually told that such and such things may be done at such and such seasons, without being informed which is the proper season at which each ought to be done, so as to have vegetables at the usual time. Thus, for instance, we know that peas, in ordinary gardens, are only produced during two or three months in the year; and as amateur gardeners cannot be expected to have anything out of the usual seasons, the object of taking up a Gardeners' Calendar is to know when the seed should be sown to produce peas at the usual time. Now, on taking up almost any ordinary gardening book, I find directions for sowing peas in January, February, March, April, May, June, October, November, and December, or in other words, in nine months out of the twelve, without any clue being given for an amateur to know which months are to be preferred."

Now Mrs. Loudon commits a great injustice to all the Calendars we have seen, because, although we are told in them that this, that, or the other may be sown, there are directions when seeds are to be sown *for main crops.* Now this must mean for ordinary seasons, and before Mrs. Loudon issues another edition, we recommend her to read Abercrombie's *Every Man his own Gardener,* and for shame expunge the sentence that condemns her predecessor, whose Calendar will be read when modern imitators will only be recognised among waste paper as the linings of trunks, or in fragments as tails for boys' kites. There is a novelty, however, for which we must give credit to Mrs. Loudon, although supplied to her by Mr. Ogle, a professional gardener. It is a list of things *not to be done* in the months, as well as the things *to be done*. They are, as may be supposed, very learned, and highly flattering to that portion of the public who read Mrs. Loudon's Calendar. It is as if the good lady had anticipated that the readers of her "things not to be done," were sure to be very stupid people. Let us give a few of her very important cautions.

"Never build, if you can help it, in January."

We should like to know whether anybody ever did build from choice, with the almost certainty of a frost.

"Never water plants during the season when they require to be in a state of repose."

All the Calendars are content to direct that we are to keep things dry, as the means of making a plant rest. The novelty which Mrs. Loudon claims the merit of is, that her Calendar, instead of saying, "You are to keep it dry," says, "You are not to water it:" this is clever and original. Other Calendars tell us we are to fumigate plants, and *afterwards syringe with clear water*. Mrs. Loudon says, "Never syringe the plants before fumigating them."

There are two classes of cautions, the one merely changing the lessons of other Calendars to negatives as palpable as those we have chosen, and others which are almost insulting, even to a booby fresh caught from the mountains, cautions as absurd as if she had said—

Never hold your hand on the fire long together.

Never walk into a horsepond in frosty weather.

Never tie a horse's tail to his manger to eat his corn.

Never lie all night out in the snow.

These are not more palpable absurdities than some of the things, which, as Mrs. Loudon says, "require especial notice not to be done," while others, as we have before observed, are mere changes rung upon words; they are vile plagiarisms from the very Calendars she affects to despise. Here and there, it is true, we discover a novelty, and it is, as a matter of course, an absurdity.

"Never water shrubs during the hot dry weather, without at the same time slightly loosening the surface of the soil, and after watering mulching with some half-rotten manure, or the short grass from the lawn."

This is perfectly original, perfectly mischievous, perfectly ridiculous. It is frequently necessary, after the blooming season and when Anemones are making their growth, to water them freely, and if this is one of the "things requiring especial notice as never to be done in July," without loosening the earth and mulching, why we can only say that many plants must go without what they want because they cannot get what they do not want. If Mrs. Loudon had produced this Calendar without reflecting on those so much superior, all had been well, and we should have merely noticed it as the hundredth opportunity of using up the wood-cuts which have done so much service, and let it find its own way; but to set out with an outrageous attack upon standard works, from which one half our gardeners learned the rudiments of the profession, was calculated to draw attention to the marked inferiority of the compilation.

OLD PLANTS VERSUS NEW PLANTS.

It is so much the rage to obtain new plants and neglect old ones, that we can hardly resist the temptation to enter the field on behalf of some especial plants, and deal a sly blow at certain rivals which have really no claim to a preference, but the solitary and valueless point—novelty. This, however, does not apply so much to subjects raised in England, as to species newly imported. If we raise plants here, and put them forth as seedling varieties, they must have some property better than their contemporaries, or the public gets dissatisfied. The rules by which even a novice, independent of his natural taste, may become acquainted with what constitutes the merit of a plant, are so simple, and withal (what with the circulation of the work in its original state, and the meanness of hireling copyists, who, for a guinea or two a-week, turn petty thieves of other men's ideas) so public, that it would be little use for a dealer to show or sell an inferior thing, unless he had made up his mind to be detected. The time for persuading people that a bad thing is good, has gone by. The fraud would only last till the plant bloomed, when a glance at Glenny's "Properties of Flowers" would tell even a tyro that he had been deceived, even if he had not sufficient natural judgment to detect the imposition without such assistance. What we chiefly allude to is the importation of novelties with high sounding names and great character, and their distribution among novelty hunters before their real merit is known. This, however, is not all, for there are some who are totally blind to all defects, if there be but novelty, and who take enormous pains to grow and show inferior things, and neglect good old plants. We remember to have given a guinea an inch for *Correa rufa*, that is to say, three guineas for a sprig of three inches. Of course we grew it with great industry, and all the skill we were master of, until it flowered, and found it not so good a plant as *C. viridiflora.* We remember, too, a new *Grevillea robusta:* we believe that was to be all we could desire in that tribe. It was in one respect more than we desired; it grew ten feet high without the shadow of a bloom; and, as it was too big for our house, we gave it to somebody who had more room, but we saw it very much increased in size without any more prospect of a bloom, and have heard no more of it. The last we heard was a hint that the then owner had an idea of making a fishing-rod of it. But these are only two instances of a thousand. How many more we could find equally disappointing is only worth considering if we were going to form a volume.

We should like some of our novelty hunters to endeavour to improve old plants, instead of looking so assiduously for new ones that "they know not of." There is a field open for them among a very pretty tribe of plants —the old-fashioned geraniums; those with scented leaves. The oak leaf is one of peculiarly handsome habit, beautiful scent, and very mean flower: produce a good flower on this, and there would be something to boast of. Others of this family, which seem to keep aloof altogether from the beautiful varieties of the scentless ones in popular esteem, would bear improvement; and improvement can be made very easily. Let but the florist take up the subject, and it is done. The flower may not be produced as good as those we allude to, but the petals may be widened; in a few seasons the flower may be greatly advanced in quality, and there is something old-fashioned and social in saluting one of the scented plants by a gentle rub of the thumb and finger on the leaf, which imparts the aroma as if grateful for the salutation.

Writing, however, of old-fashioned plants being neglected for inferior new ones, we can hardly help noticing at public exhibitions the grumbling of those who fancy that costly plants are to win, instead of beauty and skill. It is not long since we saw an instance of this at the Surrey Gardens. A gardener was roundly abusing the judges for partiality, and endeavoured to justify his censure by reckoning up the cost of his plants, and their value as specimens, against that of a collection that was placed before him; and it served to show what mistaken ideas are entertained by the gardeners of good buyers who obtain all the novelties, and of those old-fashioned people who buy nothing, but make the gardener keep up the place with old plants, and what he can beg, borrow, or —— pick up. The fact is, that judges have no business to know the cost of any thing. Shows are not to try money against money, but skill against skill. Novelties, however, may be desirable in all families, and if they are not inferior to the old ones, they may take their place by the side of, but not supersede, the established florist. Which of the Epacris family beats *grandiflora? E. miniata,* a bright scarlet, is, by the side of its crimson brother, a very beautiful object, and worthy of its place; but all the other members of the family are, in point of habit, real gracefulness, and style, inferior. Nevertheless, they are all beautiful. Which of all the hybrid Cacti beats *Cactus speciosissimus* and *speciosus?* What plant is there that comes up to the old Crassula, now of course honoured with some new name? But people may order it without knowing that old neglected plants in abundance were to be met with. By the way, Mr. Ayres had a beautiful plant in his collection, admirably grown, and well stopped while young, and, therefore, produced in a perfect little bush. To those who had never grown this plant as it ought to be grown, it appeared a perfect novelty; and there were very sagacious people who took down its new name, without dreaming that it was the same plant they had seen growing in tall gawky shoots, with a bunch of flowers on the tops. There is nothing shows the skill of a gardener more than the proper management of an old neglected plant; and perhaps we could hardly do better than give a few hints on the subject. It is quite frightful to go into some old establishments, and see the long-legged, bare, and ugly specimens of really good plants, which have been allowed year after year to go just as they liked, without so much as the timely application of the knife, or the luxury of an enlarged pot to grow in.

Many of these subjects, like the Crassula we have mentioned, would hardly be known if produced as they might be grown under good management. Can any thing be much more showy than a finely grown dwarf bushy Oleander? Yet we find them in old establishments six feet high, bare three-fourths of the way up, and a head just above the people's, with their flowers out of reach, and almost out of sight; whereas there is nothing to prevent their being produced as bushy as a geranium under three feet high, with bloom at the end of every shoot: we can hardly fancy a more showy object in a collection of plants.

The *Gardenia radicans* is another fine old plant, but its scent has procured for it a market reputation, and very handsome little specimens are to be had for a few shillings; but there is not a plant in cultivation more worthy of a place in any collection, nor that would more readily yield to the gardener's skill, if he would grow up good specimens for show. Another plant has always been an old favourite of ours, and in the present rage for cut flowers we marvel that it is not as common as mignonette; we allude to *Daphne indica odorata*, one of the most beautifully scented subjects we possess, and one that will last in bloom a considerable period. We are sorry to see plants of such real merit neglected so much, and there is no excuse for it when we seize upon worse things with such avidity. Many of the new plants are really not worth the room they take; but we ought to make some distinction between florists and botanists, for the latter take an interest in subjects which have not a single point of merit to recommend them to the florist. In botanical collections all things are admissible, from grass and chickweed to the oak! and a new weed would be as acceptable to the Botanical Societies as a new rose would be to the florist; but for the florist there must be a good proportion of flower, and the flower must have some pretensions, either by its quality or its size, as well as its colour. A rich perfume will, in the absence of these, retain for a plant a place in conservatories and greenhouses; but many subjects may be found in old establishments, far superior to popular plants of the present day, but neglected until they have lost their character, and almost their lives. They, nevertheless, do outlive all sorts of cruelty, and occasionally give a few blooms, which are cut off for the visitors, or to send into the house with a bunch of other blooms of some kind; and few, if any, persons located in these neglected places take the least delight among the plants under glass, and perhaps never set their foot in any of the plant hospitals about the place. Young gardeners should look to this; they should begin propagating some of the old things, apply to them all the skill they are master of, to produce them in the best possible state, and they will have the pleasure of beating many of the more costly and less valuable subjects that are sought with so much avidity by those who are eager to carry with novelty what they cannot command by skill in their profession.

NEW SEEDLING PELARGONIUMS.

In the following descriptive list of the new seedling Pelargoniums which have been shown at the London exhibitions during the season, the colour of the lower petals and centre is first indicated; next the colour and marking of the upper petals; this is followed by an indication of size and quality. Some of these are described in the *Annals of Horticulture*, 1846, p. 455; a comparison of the descriptions there given will show in what the flowers have varied:—

Acheron (Beck), 1847.—Deep rose purple; upper petals with a dark cloud, and irregular rosy edge; size large; form good.

Alice (Beck), 1846.—Blush; upper petals with a motley cloud, edged with blush; medium size; form good.

Ann (Beck), 1847.—Rose pink, blotchy, with white centre; upper petals with dark maroon cloud, and narrow edge of pink; medium size; form good. Obtained a certificate at the South London Floricultural Society.

Atlas (Hoyle), 1847.—Rosy purple, paler in centre; upper petals with a dark cloud and even margin of rose; size large, rather loose; form indifferent, the lower petals too long.

Aurora's Beam (Beck), 1847.—Deep rose red, with white centre; upper petals with a dark cloud, and irregular edge of rose; size large; form excellent, and of good substance. Not enough in bloom at Royal Botanic Society, but highly commended, which it well deserved.

Avenger (Thurtell), 1846.—Blush with pink veins; upper petals with a dark irregular cloud, laced with an even narrow belt of pink; size large; form good.

Belle of the Village (Hoyle), 1847.—Pink with white centre; upper petals with dark cloud and narrow even edge; size large; form good.

Bellus (Miller), 1847.—Purplish rose; upper petals with a dark cloud, edged with rosy purple; small.

Benvenuta (Hoyle), 1847.—Light red; upper petals with a dark blotch and broken veins; size large; form reflexed when fully open.

Brilliant (Beck), 1847.—Light vermilion red; upper petals irregularly clouded, and with a broad margin of vermilion; medium size; form good.

Brilliant (Topping), 1847.—Bright scarlet-red; upper petals same colour, with a dark spot; size large; form moderately good, flat, with broad petals. Obtained a certificate at the Horticultural Society: chiefly valuable on account of its colour.

Cavalier (Beck), 1846.—Light red; upper petals clouded and veiny, with a brilliant edge of scarlet; size large; form good, a little uneven. Obtained a first prize at the Horticultural Society.

Centurion (Beck), 1846.—Light rose, with dark blotch, and white centre; upper petals with a dark cloud, and irregular edge; size large; form good, rounded and compact. Obtained a second prize at the Horticultural Society.

Champion of Devon (Topping), 1846.—Blush with rosy veins; upper petals with a veiny irregular maroon cloud, margined with blush; size very large; form rather loose.

Childe Harold (Miller), 1847.—Pale rose, white centre; upper petals with an uneven dark clouding; medium size; form moderately good.

Christabel (Hoyle), 1847.—Light rose with pale centre; upper petals with a dark cloud and broken edge of bright red, edged with pink; size large; form moderately good, reflexed.

Clown (Beck), 1847.—Rose pink, with a largish distinct blotch of deep rose on each lower petal, and distinct pure white centre; upper petals rose, margined with light pink; medium size; form good; good ornamental variety.

Cruenta (Beck), 1846.—Deep red with bluish tinge in centre; upper petals with a large black blotch and broad irregular edge of red; medium size; form good, round, compact and cupped. Obtained a first prize at the Horticultural Society.

Crusader (Hoyle), 1847.—Light red, with bluish centre; upper petals with a veiny cloud, and irregular edge; size large; form good, even and compact. Obtained a certificate at the Horticultural Society.

Delicatissima (Beck), 1847.—Blush pink, with clear white centre; upper petals with a dark motley clod, and narrow regular edge; size above medium; form excellent, even. Obtained a certificate at the Royal Botanic Society.

Diamond (Miller), 1846.—Pure white; dark narrow cloud, shading off to purple, with white margin; size above medium; form moderately good when fresh blown.

Distinctus (Miller), 1846.—Purple-lilac, veiny, and blotched; upper petals with a dark maroon cloud, and even edge of lilac; size large, form good; rather fresh in colour.

Dorcas (Beck), 1846—Pale blush; upper petals with dark maroon cloud, and narrow edge of blush; size large and very showy; form good, even. Obtained a certificate at the Royal Botanic Society.

Duke of Brunswick (Baskett), 1846.—Purple rose, with blotches, and white centre; upper petals with a dark cloud, and narrow edge of purplish rose; medium size; form moderately good, but rather crumpled.

Duke of Rothsay (Hoyle), 1846.—Light red; upper petals with a large distinct spot, edged with scarlet; size large; form good, sometimes a little rough; a very showy variety.

Eclipse (Hoyle), 1846.—Brilliant red; upper petals with a dark spot and veins; medium size; form rather uneven.

Eclipse (Miller), 1846.—Pale purplish rose; top petals with a dark cloud; form indifferent.

Elegans (Topping), 1847.—Purplish rose; upper petals with a very dark cloud; size large; form moderately good, flat, with broad petals.

Excelsa (Beck), 1847.—A fancy variety; white with faint rose purple spots on upper petals; small.

Favonius (Beck), 1846.—Deep pink or rose, with crimson dashes, and decided pure white centre; upper petals with a dark cloud, and irregular margin of pink; size large; form good, but a little open from the lower petals being a trifle too long; a very showy variety. Obtained a second prize at the Horticultural Society.

Favourite (Mitchell), 1847.—Blush; upper petals with dark maroon cloud, and narrow border of blush; medium size; quality indifferent.

Feu de Joie (Gaines), 1846 ?—Rose red; upper petals with a veiny cloud, and broad irregular edge of red; size large; quality indifferent.

Flamingo (Hoyle), 1847.—Clear red; upper petals with a dark cloud, and narrow edge of red; size large; form good.

Garland (Miller), 1846.—Rosy, pale centre; upper petals with a dark veiny cloud; size large; form irregular and crumpled.

Gem (Beck), 1846.—Pink; upper petals maroon shading off to carmine, with a narrow margin of pink; medium size; form good, cupped.

Grandis (Miller), 1847. — Rose pink, blotchy, with white centre; upper petals with dark cloud, and irregular edge of pink; size large; rather crumpled. Obtained a certificate at the South London Floricultural Society.

Gulielma (Beck), 1846.—Light purplish rose, with a dash of deep rose, and white centre; upper petals with a maroon veiny cloud, and irregular broken edge; size large; form good, compact, round, petals reflexing a little in age. Obtained a first prize at the Royal Botanic Society.

Hecla (Coysh), 1847.—Rose; upper petals with a dark veiny cloud; size medium; quality indifferent.

Hindoo (Beck), 1847.—Light red; upper petals dark maroon, with narrow belt of red; size large; form good; a handsome variety.

Honora (Beck), 1847.—Pale pinkish blush; upper petals dark maroon, with a narrow even belt of blush; size large; form excellent, even. Obtained first prizes both at the Royal Botanic Society, and also at the Horticultural Society.

Jenny Lind (Ambrose), 1847.—A fancy variety, with whitish ground colour, blotched and veined on each petal with bright rose-purple, in the way of Anais.

Julius (Hoyle), 1847.—Pale pink, with paler centre; upper petals with a large dark cloud, and broken edge of rose, margined with pink; size large, form good.

Lagoma (Hoyle), 1846.—Purplish rose, pale centre; upper petals clouded with an irregular edging; size large, form moderately good.

Lilacene (Beck), 1846.—Blush, with a lilac tinge, white centre; upper petals with a dark uneven cloud, edged with pinkish lilac; size large; form good, rather reflexing.

Major (Beck), 1846.—Light red, upper petals with a dark cloud edged with red; size large; form good.

Marian (Gaines), 1847.—Blush; upper petals with a dark cloud, and narrow even margin of red; size below medium; form indifferent, uneven, thin.

Model (Gaines), 1846.—Light purplish rose; upper petals with a dark cloud, and narrow edge of purplish rose; medium size; form good, even.

Pacha (Beck), 1846.—Light rose, with rosy veins, and white centre; upper petals with a very dark cloud, and narrow even edge of rose; medium size; form good.

President (Hoyle), 1846.—Red, bluish tinge in the centre; upper petals with a veiny spot; medium size; form moderately good.

Pretender (Thurtell), 1846.—French white, with purplish veins; upper petals dark purple, with a maroon cloud, shaded off pale towards the edge, and margined with a narrow belt of purple; size large; form rather irregular.

Prometheus (Hoyle), 1847.—Brilliant red; upper petals with a small very dark spot; size large; form moderately good, but not very even; a brilliant variety.

Proserpine (Beck), 1846.—Rose purple, with blotches of deeper colour, and pale centre; upper petals with dark cloud, and narrow edge of rose; size large; form good, moderately flat.

Purple Aurora (Beck), 1847.—Rose-purple with blotches, and pale centre; upper petals nearly black, with a belt of rose; medium size; form good. Obtained a certificate at the South London Floricultural Society.

Queen of Kent (Miller), 1846.—Pale pink, light centre; upper petals clouded with maroon, and irregularly edged with pink; form moderately good. Obtained an inferior prize at the Horticultural Society.

Refulgent (Beck), 1847.—Light pinkish red; upper petals clouded, with a broad irregular edge of red; medium size; form good.

Rollo (Hoyle), 1847.—Rosy pink, slightly veiny, with a very decided pure white centre; upper petals with a dark cloud, and very narrow even edge of rose; size very large and showy; form moderately good, reflexes a little.

Rosalind (Beck), 1847.—Rose pink, with decided white centre; upper petals with a small cloud, and irregular margin; medium size; form moderately good, lower petals too long, rendering the lower half of the flower open. Obtained a certificate at the Royal Botanic Society.

Rosy Model (Miller), 1846.—Rose, white centre; upper petals with a dark mottled cloud, and irregular crimson edge; medium size; form compact and good. Obtained a certificate at the South London Floricultural Society.

Rubra (Beck), 1847.—Blush pink, with veins, and white centre; upper petals rich maroon, with a narrow belt of pink; size large; form good; a very handsome variety.

Salamander (Gaines), 1846.—Red, approaching scarlet; upper petals with a dark spot, and veins; over medium size; form not good, petals broad, but undulated. Chiefly useful from its colour. Obtained a certificate for its colour at the Royal Botanic Society.

Satisfaction (Hoyle), 1847.—Rose, pale centre; upper petals with a dark cloud, and irregular edge; medium size; form moderately good, rather crumpled.

Speculator (Hoyle), 1847.—Rose pink with white centre; upper petals with a dark clouding, and even margin of pink; medium size; form moderately good, a little uneven and reflexed.

Star (Beck), 1846.—Light rose, with a dash of deep red, and white centre; upper petals with an irregular dark clouding, surrounded by a broad edge of pink; size large; form good, petals rounded, but a little reflexed.

Superlative (Hoyle), 1847.—Blush pink, with white centre; upper petals with very dark cloud, and even narrow edge of rose; size large; form good, even, cupped. Obtained a certificate at the Horticultural Society.

Telegraph (Miller), 1846.—Rose colour; upper petals with a dark cloud, and pale red edge; form moderately good.

NOTES ON FLOWERS AND FLOWERING PLANTS.

HIPPEASTRUM VITTATUM, *Herbert* (banded-flowered Hippeastrum).—Amaryllidaceæ § Amarylleæ.—A bulbous plant with long strap-shaped leaves, about an inch wide, and a strong flower-stem producing from four to nine large flowers at the top; the flowers slightly tubular, about five inches long, divided into six rather spreading segments, white with a double stripe of dull red down each. A native of South America. Introduced in 1769. Flowers in April and May. Known also as *Amaryllis vittata* (Aiton). *Culture.*—Requires a stove or warm greenhouse; rich loam, good drainage, and absolute rest in autumn and winter; propagated by offsets.

Dendrobium Kuhlii, *Lindley* (Kuhl's Dendrobe).—Orchidaceæ § Malaxideæ-Dendrobæ.—This is a handsome species, allied to *D. secundum.* It has rather slender erect stems, furnished at intervals with oval-oblong leaves. The blossoms, which grow rather numerous and near together towards the ends of the year-old shoots, are in short horizontal racemes; they are of a pretty light rose colour, larger than in *D. secundum,* and retain their freshness longer than is usual in this genus. A native of Java. Introduced about 1845. Flowers in July and October. It is the *Pedilonum Kuhlii* (Blume). *Culture.*—Requires a hot moist stove; turfy peat soil; propagated by division of the plant. (212)

Pentstemon McEwani, *garden hybrid* (McEwan's Pentstemon).—Scrophulariaceæ § Antirrhinideæ-Cheloneæ.—A very handsome perennial plant of dwarf bushy habit, flowering freely, and forming a conspicuous ornament of the flower garden. It has opposite lance-shaped leaves, the branches being terminated by a leafy panicle of large blossoms, in size and form resembling those of *P. gentianoides,* but of a light rose colour, with a white throat, and dark longitudinal streaks. It was raised about two years since; and is now (1847) in the hands of Messrs. Young of Epsom. *Culture.*—Hardy in favourable situations, but usually requires winter protection; loamy or moderately good garden soil; propagated by cuttings planted under hand-glasses. (213)

Camellia japonica, *var. miniata* (vermilion Japan Camellia).—Ternströmiaceæ.—A very beautiful variety of Camellia, possessing the usual habit and appearance of the varieties of *C. japonica.* The flowers measure three inches in diameter; they are of good shape, well filled up with even imbricating petals; the principal part of the flowers embracing the outer series of petals, is of a rich brilliant crimson; within them is a circlet of three rows of very pale rose-coloured petals, and the centre consists of a little tuft of crimson petals, giving the flower a variegated appearance, which is, however, liable to vary according to treatment. It is a garden mule, raised by Mr. Low, of Clapton, from seeds of *C. myrtifolia,* supposed to have been fertilized by the variety—Lady Hume's Blush; first bloomed in 1847; it is found to be a constant variety and very free bloomer. *Culture.*—Requires a greenhouse; 'loam and peat; propagated by inarching or budding on the original species. (214)

Medinilla speciosa, *Blume* (showy Medinilla).—Melastomaceæ § Melastomeæ-Miconieæ.—This is a handsome erect shrubby plant, of four or five feet high, with twice or thrice forked, three or four angled branches, and large oval, or oval-oblong acuminate leaves, mostly in whorls of three or four, rarely opposite, five or seven nerved, the nerves beneath and the margin often red. The flowers are borne in a dense branched panicle forming a drooping span-long thyrse; they are moderate sized, of four ovate delicate rose coloured petals, and eight long curved anthers. A native of Java and the Philippine Islands. Introduced in 1846. Flowers in July. It is also called *Melastoma eximium* (Blume). *Culture.*—Requires a stove; loam and peat; propagated by cuttings placed in heat. (215)

Gardenia longistyla, *Hooker* (long-styled Gardenia).—Cinchonaceæ § Cinchoneæ-Gardenidæ.—A handsome large shrub, with large opposite, oval, soft hairy leaves, the flowers forming a large cluster or fascicle, inclining to one side, at the ends of shoots; the latter have a slender green tube, two inches long, and a limb of five oval spreading segments, greenish without, white within; the style is twice the length of the corolla, terminated by a large globose stigma. A native of tropical Western Africa. Introduced about 1845, and first flowered in 1847 by Messrs. Lucombe, Pince, and Co. Flowers in June. It is the *Randia longistyla* (De Candolle) but Sir W. Hooker considers it to be a *Gardenia. Culture.*—Requires a stove; loam and peat; propagated by cuttings planted in heat. (216)

Tropæolum speciosum, *Poeppig* (showy Indian Cress).—Tropæolaceæ § Tropæoleæ.—A very handsome climbing plant, with slender herbaceous stems many feet long, and alternate subpeltate leaves cut to the base into six oblong obtuse leaflets. The flowers are very numerous, axillary, with a five cleft calyx, prolonged behind into a long attenuated spur, two upper petals wedge-shaped, lower ones cordate, clawed, the whole flower rich vermilion red. The flower stalks are red, and partake of the character of tendrils. A native of the Andes of Patagonia, near the snow line. Introduced in 1846. Flowers throughout the summer months. It has a good deal the habit of T. pentaphyllum. *Culture.*—Half hardy; but very ornamental in a greenhouse; probably the roots will stand outdoors during winter; light loamy soil; propagated by cuttings placed in heat, or by seeds. (217)

Lisianthus acutangulus, *Ruiz and Pavon* (sharp angled Lisianth).—Gentianaceæ § Gentianeæ.—A biennial plant, with an erect sharp four-angled stem, of two, three, or more feet high, nearly simple; the leaves are large, opposite, ovate-acute; the flowers in a lax dichotomous panicle, growing in one-sided racemes; they are between bell-shaped and funnel-shaped, green and inconspicuous. A native of various parts of South and central America. Introduced in 1846. Flowers during the summer. It is also called *Lisianthus* *trifidus* (Humboldt, Bonpland, and Kunth), and *L. tetragonus* (Bentham). *Culture.*—Requires a warm greenhouse or a stove in winter; sandy peat soil; propagated by seeds. (218)

IXORA GRIFFITHII, *Hooker* (Mr. Griffith's Ixora).—Cinchonaceæ § Coffeæ-Psychotridæ.—A noble shrub, of branching habit, with rich brown branches, and very large (sometimes a foot in length) oblong-ovate acuminate glabrous leaves, the branches terminated by large broad flattened compound cymes, of innumerable richly orange-coloured blossoms; the cyme is subtended by two small leaves; the flowers are salver shaped, with a very slender tube an inch and a half long, and four roundish spreading lobes, all at first opening orange-yellow, becoming red-orange with age. A native of Singapore, whence it was introduced to the Clapton Nursery, by Mr. Low, Jun. Introduced in 1845. Flowers in July. It was first bloomed in July, 1847, by Messrs. Lucombe, Pince, and Co. Exeter, who purchased it of Mr. Low. The late W. Griffith, Esq., whom the name commemorates, first gathered it at Mergui, and his dried specimens are in the herbarium of Sir W. J. Hooker. It has borne in our gardens the name of *Ixora hydrangeæformis*. *Culture.*—Requires a stove; strong turfy peat soil, with a little gritty sand and charcoal; propagated by cuttings planted in sand and placed under glasses, in a moderate heat. (219)

ACHIMENES VENUSTA, *garden hybrid* (beautiful Achimenes).—Gesneraceæ § Gesnereæ.—A very charming variety of Achimenes, apparently a hybrid between *A. patens*, and *A. rosea*. It grows about a foot and a half high, with moderate-sized rough ovate-serrated leaves, and numerous flowers from the axils, having the appearance of growing in whorls; they are intermediate in size, and of a light clear purple-rose colour, very distinct and handsome. It was exhibited at the meeting of the Horticultural Society, in September, 1847. *Culture.*—Requires a hotbed frame or stove during the earlier stages of growth; blooms in a greenhouse; turfy peat and loam; propagated by its scaly tubers, by cuttings, or by leaves. (220)

POGOGYNE MULTIFLORA, *Bentham* (many flowered Pogogyne).—Lamiaceæ § Melisseæ.—A small herbaceous perennial, with spreading branched stems, numerous small glabrous, entire, oblong, very obtuse leaves, and small dense terminal heads of purple labiate flowers, not very showy. A native of the northern parts of California. Introduced in 1847, by Mr. Hartweg, to the Horticultural Society. Flowers in September. *Culture.*—Hardy; common garden loam; propagated by division of the plants, by cuttings, or by seeds. (221)

GILIA PHARNACEOIDES, *Bentham* (pharnaceum-like Gilia).—Polemoniaceæ.—A very slender annual plant, with divaricate branches, and much the general appearance of the Cornfield Spurrey. On the lower part of the stem the leaves are opposite, and cut into three awl-shaped segments, appearing like a whorl of narrow leaves; the upper leaves are alternate. The flowers are small, pale lilac coloured, and grow singly on longish stalks from the forks of the dichotomous branches. A native of sandy places near the Columbia river in North-west America, and of New California. Introduced in 1847, by Mr. Hartweg, to the Horticultural Society. Flowers in summer. *Culture.*—Hardy; light sandy soil; propagated by seeds. (222)

ACHIMENES SKINNERI, *Lindley* (?) (Mr. Skinner's Achimenes).—Gesneraceæ § Gesnereæ.—A tall growing species, with much the habit of *A. hirsuta*. It has rough hairy ovate deeply serrated leaves, and large rosy-purple blossoms, the throat and mouth of the tube dull orange, marked with numerous dots. A native of Guatemala. Introduced in 1847. Flowers at the latter end of summer. *Culture.*—Requires a hotbed or stove in the earlier stages of growth; blooms in a greenhouse; turfy peat and loam; propagated by its scaly tubers, by cuttings, or by leaves. (223)

HIPPEASTRUM VITTATUM, *var. latifolium* (broad-leaved banded Hippeastrum).—Amaryllidaceæ § Amarylleæ.—A bulbous plant, with long strap-shaped glossy leaves about an inch and a half wide, and a stout stalk producing seven or eight flowers at the top; they are slightly tubular at the base, five and a half inches long, deeply divided into six segments, with a broad dull red stripe down the centre of each, and a green star at the bottom. A native of South America. Introduced in 1774. Flowers from May to July. Known also as *Amaryllis vittata major* (Lindley). *Culture.*—Requires a stove or warm greenhouse, rich loam, good drainage, and rest in winter; propagates readily by seeds or offsets. (224)

OSBECKIA CANESCENS, *Meyer* (hoary Osbeckia).—Melastomaceæ § Melastomeæ-Osbeckieæ.—A shrubby plant, very slightly branched, with square rough stems growing from two to three feet high, and opposite ovate leaves slightly heart-shaped at the base, and placed crosswise on the stem; the flowers grow in a paniculated raceme at the top of the stem, and consist of four inversely heart-shaped petals, notched at the end, and of a light rose-purple colour, but of short duration. Said to be a native of Mexico. Introduced in 1838 from the Berlin Garden. Flowers from July to September. *Culture.*—Requires a cool stove or greenhouse in summer; loam and peat; propagated by cuttings in heat. (225)

NOTES ON FLORISTS' FLOWERS.

BY GEORGE GLENNY.

THE principal novelties of the last few weeks are dahlias; and there have been several opportunities of showing in public, (although not exactly among the right section), the subjects that are to come out next year. So far as the early shows have been concerned, there has been very little that was at all striking, but a good deal of mediocrity. The general fault of the novelties has been want of round outline.

The roseate or cockade outline, has prevailed to a great degree, but there have been two or three exceptions. At the time we write this, we have not made up our minds to anything, but shall merely describe a few seedlings that we have seen, without knowing whether we shall see them again or not, and certainly without knowing whether upon further acquaintance we shall recommend them to be grown. A few words perhaps on our list of last year may not be considered out of place.

Berryer, Gem, Yellow Standard, Miss Vize, Lady of the Lake, Star, Rosetta, Victorine, Louis Philippe, Andromeda, so fully answer the description we gave of them, that we need make no remark. With regard to the Queen of Sheba, we are compelled to admit she does not, inasmuch as all the early part of the month she was speckled, tipped, shaded, blushed, and bore all manner of truant characters; so much so, that many who have got a good deal to learn as well as unlearn, before they ought to trust themselves to write about dahlias, fancied they had made a great discovery.

We have a strange straightforward way of describing things as they are, and of obeying our own eyesight rather than believing anybody; and when we saw nine blooms at one time, not one of which had the smallest indication of colour, but were as pure a white and as fine a shape as we ever want to see a flower of the kind, we had no choice but to describe it as a white. There was no evidence before us that in the early part of the season, the lady had coloured too much, or otherwise spoiled her complexion, for when we picked the flower to pieces, the base of the petals indicated no shades of colour, and the flower died as white as it lived. However, it has been exhibited for a white, and passed for a white many times this season, and therefore the worthy doctor who expresses his disappointment in a Garden Newspaper, and calls upon the reader "to judge his astonishment at finding that the white dahlia wasn't a white dahlia at all," only proves that this, like many other flowers, is uncertain; and that the writer is greatly astonished at a circumstance which creates no surprise in persons who know any thing about dahlias, and the uncertainty of their always blooming in character.

We spoke of the flower as we saw it, and we have seen it this year as we saw it last year. It is not a white dahlia always, but it was when we described it, and there was not the least reason to suppose it was ever otherwise from all we saw. We have not seen it grown so well as it was last season, but we are writing rather early in the month, and it may be like scores of other excellent and first-rate things—good for nothing till the cold weather comes.

Goldfinder has up to this time shown badly, not like itself; the outline, which was last year far better than any yellow, except Dodd's Prince of Wales, has at present been deficient, nevertheless, we have seen one plant growing, where all the flowers were double, symmetrical, and fine. This is very likely to bring up its lee way among the later shows. The grand test for all these things is the Metropolitan show, which being so late in the month, must be going on after this is printed.

We think no more of the judgment on seedling flowers anywhere else, than we do of a man's praise of his own novelties. The packing of judges is managed to a most abominable extent; and if a man who will swerve for nobody is proposed, some fellow who has laid his plans for his own benefit and tricked or pushed his own man in, will object, because an honest judge is certain defeat to the trickery of packing. Even if the other two are packed, or the other four, in cases of five judges, the one sound man is security against the deepest game the rest may be inclined to play.

At a show at Chelsea, there was enough to call into action all the cunning of the Fancy. Some man was stupid enough to propose money prizes for the best seedlings, and the society in a body was silly enough to adopt the proposition. It promised seven prizes, gave only three, and these were given by no means to the best flowers. The distinction of first, second, and third, made it infinitely worse; but nobody who understood these matters expected anything else, and so no person was disappointed. It had been most unjustifiably rendered more important by a trick that we think almost unworthy of an enlightened age:—Letters were written to the members of the Metropolitan Society, upon prospectuses of the Chelsea Show, announcing, without the slightest authority, that the Metropolian Show was to be given up. The effect was to bring up some of the members who attend the principal show in the whole country, and it had one good effect: it showed some who think the Metropolitan very arbitrary, that there is nothing like fairness, unless there are persons who will carry out an object in spite of menaces and grumbling. Among the flowers we have seen up to this time are :—

Samuel Girling.—Good outline. Young flowers inclined to quill, deep crimson, well up in the centre, and good eye, petals barely touch each other, but the flower is very promising. Raised at the Dane Croft Nursery, and named after the late owner.

Jenny Lind.—A fancy flower of striking character, purple and white, petals rather long and ribbed, but the centre good and general form very fair, with colour that would carry through a dozen faults. Dane Croft Nursery.

Shylock.—A very fine deep scarlet, good average outline, rather open, which gives it a coarse appearance; good useful looking flower.

Queen of England.—Colour of Beauty of Sussex, but overgrown and therefore larger, eye silvery and rather loose in the state we have seen it, excellent outline; upon the whole a showy flower. Dodds, Salisbury.

Gem.—A tipped or edged flower, very pretty, about the stamp of Miss Vyse, Lady of the Lake, and some other light flowers, very showy, and the colour well displayed on all the petals. Oakly, Southampton.

Nell Gwynne.— Sulphury or primrose yellow, a little rosetty in the outline, sunk eye in the young state, plenty of petals, and it may come up useful.

Belted Knight.—A curious mixture of yellow and salmon colour; bold handsome looking fancy kind of flower, but flat in the centre. Keynes, Salisbury.

Walter Hilton.—Large bright orange colour, flat in the face, fairish outline, very double, grown too large, and very likely to be better if grown within a moderate compass. Keynes, Salisbury.

Attraction. — An improvement on the Bedford Surprise, quite as richly shaded; treacherous in the eye, good general form and plenty of stuff in it. Bunby, Stoke.

Jenny Lind.—Yellow. 1847. Promising, no particular fault, general good form, and bright colour.

Maid of Kent, 1847.—Every promise of a first-rate flower, in the way of Radziville, but with a rosy instead of a purple edging or tip. Bally of Erith.

A Fuchsia called Globosa Carnea has been handed about, and being a large and graceful flower, with flesh coloured sepals and blood red corolla, it will have many admirers: the blooms hang upon very long footstalks, and it is unlike the thousand of the same colour.

A second Fuchsia, a little like "One in the Ring," which has fully justified our character of it in the Garden Almanac, has been raised by the same grower; the habit is pretty, and the flower much shorter, so that it forms a distinct variety; it is to be called the Beauty of Chelmsford.

A third is to be valued for its habit, which it is difficult to describe. It does not lollop over the pot like many, but grows upright, and its branches grow up first and turn over, so as to hang pendulous all round, like a fountain almost in outline; the stems are wiry, the foliage small, and the plant altogether elegant. This is a red variety, and the most abundant bloomer. Mr. Turville, the raiser, had an idea of calling it the Fountain, but this was not settled.

There were at the Chelsea Show a number of seedlings without any names to them; some of them deserved a passing remark, but for want of something to distinguish them, we could take no notes.

THE VERBENA AS A CLUMP PLANT.

Nobody who has not seen this little flower in great profusion in beds and borders, can form a notion of its value as a clump plant; but there are so many varieties of no value, and so many of bad habit, and of no describable colour, that before any one ventures to use it to a great extent, he ought to visit some nursery where it is grown in perfection, and to some extent. If there were no other flower for the borders and clumps, the verbena would, nevertheless, make a fine bed garden; but it makes the finest groundwork in the world for all other beauties. There is nothing, however, to compare with it for Dutch gardens, or small beds on grass, where a figure is attempted, because you may procure them of any height, from that of Melindres, which is the dwarf scarlet that creeps along the ground, rooting as it goes, and forming a brilliant carpet of whatever figure may be designed for it, to the tall varieties, which grow pretty well two feet high, and are as profusely covered with bloom; and besides this, there are pretty nearly all colours and shades. Those who intend to grow verbenas must have an eye to the object in view; if it is simply to make an out-door garden look gay eight months out of the twelve, he may select dwarf bushy, and dwarf creeping varieties, with as many different bright colours as he can find; if, on the other hand, he proposes to exhibit, and desires to cultivate only the best kinds, he must look out for the show kinds only, some of which are not of the best habit, though of the best formed flowers, and in selecting these he must appeal to the standard—round flowers, no notch, a large handsome close truss, bushy foliage, abundant bloom, and get as great a diversity of colours as he can find; and these plants may fill up a clump, or be planted between all the other flowers in the border, or be grown in pots or ornamental vases, with other perennials; in all and every situation and position they are useful and gay, and lasting. They cut as well from one place as another for exhibiting, and grow stronger and better in the open ground to cut from than in pots. In Dutch gardens, when there is a geometrical figure, the colours should be alike in each bed, and according to the beds the colour should be uniform. If there be six beds of a form, which is very common, three alternate should be one colour, and three other alternate should be another colour; and if any other beds are to be verbenas, let them form as great a contrast as possible; and if eight beds of a sort occur, let the alternate ones just the same be of one colour, and the others of another. But in all geometrical gardens there are multiples of the number next the centre; if there are six in the centre circle, there are generally twenty-four in the whole. The larger ones, nearer the outer circle, may be anything, but verbenas are the best things for the centre ones, and scarlet and white give the greatest contrast.

Very few of our nurseries have these beautiful plants in collections; the most successful raiser and grower is, perhaps, Smith, of the Hornsey Road, who took six or seven prizes at the Metropolitan Society's autumn exhibitions. At this nursery all that are worth growing, or that are put forth as promising, are grown in collections, and a considerable number of seedlings are flowered every year. It is needless to say that many bad ones are let out for one good one, and Mr. Smith's collection of all that were advertized by others as first-rate sorts is worth inspecting, if it were only to enable a collector to congratulate himself on his escape from the same infliction. Perhaps out of two or three score of verbenas strongly recommended by dealers, you may find, if lucky, three or four good enough to retain and propagate, and the rest not worth keeping. This is the nurseryman's drawback in all branches of his trade—he must buy everything for fear of missing a good one, and he finds himself with twenty worthless for one that he can recommend as good. The greatest fault in the verbena is the narrow segment and deep notch; the improvement, therefore, to look for is in the widening of the segments, and the shallowing or the disappearance of the notch. This is not to be accomplished all at once, but many beautiful varieties, with very much widened lobes, have driven the narrow lobes from the field, and they will very likely, ere long, arrive at something approaching the circle, and entirely lose the notch. Many of the flowers are thick, and therefore last a considerable time in bloom; besides which, the plant naturally continues growing and blooming for months. This is promoted by cutting off the decayed flowers if seed is not wanted, for nothing weakens a plant more, or hastens its decay sooner, than allowing it to seed. The only employment we ever care to see a lady engaged in, as a garden job, is cutting off the decaying blooms from plants when seed is not required, for the growth of every thing is greatly retarded by the swelling of the seed-pods or fruit, and it is a job by no means too masculine; we should be sorry to see a female at the unfeminine labour of digging, even with the kind of spade recommended by Mrs. Loudon, and should strongly suspect that any female who followed the directions, had been brought up in a market-garden, and in her time had hoed onions at a shilling a day; but there is nothing unfeminine or indelicate in cutting off the decaying flowers, that the health and flowering beauties of a plant might be prolonged.

ESCULENT MUSHROOMS.

It is a curious fact that although a considerable number of species of fungi are freely eaten in Italy, our common mushroom, the *Agaricus campestris*, is there interdicted, and any specimens of it brought to the fungus market at Rome are sent under escort, and thrown into the Tiber.

This Agaric is almost the only kind of fungus which is commonly used in this country, notwithstanding that other kinds abound, which are decidedly wholesome, although they are—chiefly through ignorance—suffered to perish, or are regarded as so many nuisances. Both Russia and Italy are famous for the number of their esculent funguses, and for the quantity of them which are used as food both in a fresh and dried state. In both these countries a considerable proportion of the food of the poor is thus derived; and a large annual amount is realized from their public sale. No good reason exists why this source of food should not be turned to account in our own country; in fact in times of scarcity, the use of fungi in this way would be a source of public benefit, and the neglect of them can therefore be only looked upon as a public loss.

It may be proper to state, that all fungi should be used with great caution, for even some of the wholesome kinds acquire deleterious properties when grown under peculiar circumstances. Some kinds are naturally very virulent. The edible species should be well masticated, as this greatly lessens the effect of poison. In case of mistake, it may be well to mention, that to relieve a patient who has taken poisonous fungi, vomiting should be immediately excited; and then vegetable acids should be administered, such as vinegar, lemon-juice, &c. It is a safe rule not to eat the less common, even of the edible kinds, until after they have been soaked in vinegar, which extracts much of their poisonous qualities when these are present.

In a former part of this volume (page 420) we have noticed a recent work on the subject of esculent funguses, in which are described upwards of thirty species, most of which abound in various parts of this country, and might be turned to valuable account as a source of food, and especially in times of scarcity. We propose to notice the principal of these, and to point out their relative importance; before proceeding with this, however, it may be as well to explain the different terms which are used in application to the various parts of fungi.

In most fungi (that is, excluding the minute species) two parts may be clearly distinguished, namely, a stalk, and that which it supports. The stalk is, in technical language, called the *stipes;* sometimes this is considerably developed, in other cases, it is almost or altogether absent, but usually it is present in all the larger fungi which are worth notice as esculents. The upper part of the plant, supported by the stipes, (which it will be remembered in the common mushroom, is umbrella-shaped when the plant is fairly developed,) is called the *pileus* or cap; this umbrella form is not constant with all fungi, but the pileus is usually more or less spreading at the top of the stipes. At the base of the stipes is the *volva* or wrapper, which is a membrane originally investing the whole plant; as the plant becomes elongated and developed, however, it bursts through this wrapper, leaving it at the base of the stipes. Then there is the *velum* or veil, a horizontal membrane, which in the younger stages connects the edge of the pileus with the stipes; that part of the veil which remains attached to the stipes, in the more advanced stages, is called the *annulus* or ring, and invests the stipes like a loose collar. The *hymenium* is that part in which the sporules (reproductive germs) are immediately situated; this part varies in character in different kinds, and the variations bear different names; in some it consists of thin parallel plates, called *gills* or lamellæ, in others of anastomosing veins, of contiguous tubes, of pores, or of conical spines on the inferior surface. The internal substance of the pileus and stipes, is termed the *flesh.* We will now proceed with a brief description of those species set down as edible, in Dr. Badham's work, alluded to above, adding some others, and giving so much of their technical distinctions as would enable any one with a little attention to recognise them.

Agaricus.—*Pileus* with stipes, or fixed by its side; *volva,* none; *hymenium,* composed of straight radiating gills.

1. *A. atramentarius.*—*Stipes* about four inches high, swollen at the base, piped, juicy, fibrous: *pileus* somewhat fleshy, campanulate with an uneven margin, greyish, becoming light reddish brown, slightly hairy, often corrugated, sometimes scaly at the apex: *gills* numerous, deep with clear veins, light brown, the edges grey or white, free, obtuse behind.—This species affords a fine ketchup when employed in a young state. It grows in tufts and is extremely common in gardens near dunghills and in waste corners, often growing upon stumps of trees in such situations. Occurs both in spring and autumn, but chiefly in autumn.

2. *A. campestris.*—*Stipes* two or three inches long, white, solid, fleshy, furnished with an annular veil: *pileus* fleshy, dry, convex, at length plane, white changing to yellowish or brownish, subsquamose or sericeous: *gills,* free, ventricose, pink changing to deep purplish-brown: *flesh* white.—This is our common mushroom, the uses of which are well known. The plant is frequently gregarious, and is extremely common, occurring in pastures and meadows, less frequently in woods. It is met with both in the latter part of the spring, and in the autumn, but most commonly about September. Dr. Badham enumerates five varieties, which he distinguishes by the following names and characters:—a. *edulis,* the button mushroom, which has a white smooth continuous epidermis, gills rounded at their posterior end, and a large somewhat funnel-shaped *double* ring, free, and sometimes moveable on the stem: *β. pratensis,* which has a duskier pileus with ragged margins, gills ventricose, and the ring sub-fugaceous, of a cobweb texture; the colour of the flesh is vinous: *γ. silvicola,* which has pallid gills tapering equally at both ends; the stipes with a very delicate ring, and bulbous at the base, showing traces of a volva: *δ. anceps,* the hedge mushroom, unwholesome; it has a fistulose stipes, the pileus when young is obtusely conical, at maturity flat, and more or less concave in age, the gills lurid red, the ring firm, broad, reflexed and persistent; it is, moreover, extremely light compared with its bulk: *ε. bovinus,* the ox-mushroom, which is very large, the pileus shaggy, at first nearly white but when mature of a rich tawny colour, sometimes red-brown, the gills not ventricose but

equal at both ends, the stalk solid, attenuated at the very base, but thickened just above, and the ring persistent hanging round the stalk.

3. *A. castaneus.*—*Stipes* from one to three inches long, light lilac, furnished with a delicate veil of floccose threads: *pileus* somewhat fleshy, convex when young, but becoming umbonate in age, chestnut colour, from one to three inches broad: *gills* ventricose, light purple changing to ferrugineous.—This is a common species, growing in numerous circular patches under shady trees, and occurring in summer and autumn. In a raw state its taste resembles that of *A. oreades*, but it has no smell; it is reported to be esculent.

4. *A. comatus.*—*Stipes* four inches high and upwards, somewhat bulbous at the base, white, hollow, with a moveable ring: *pileus* cylindrical, splitting and turning up at the edges, white, covered with woolly scales, often showing the colour of the gills: *gills* numerous, free, white when young, then pink, and finally black: *flesh* thick in the centre, very thin at the margins.—Young specimens of this very fugacious species may be used either for ketchup or for table. It is very common in rich pastures, waste ground, and in kitchen gardens, and is found in early spring and in autumn. It is subgregarious.

5. *A. deliciosus.*—*Stipes* one to two inches high, tapering downwards, hollow with age: *pileus* fleshy, three to four inches across, glutinous, dingy orange, obscurely zoned, the margin at first involute, then expanded, afterwards depressed: *gills* decurrent, narrow, of the colour of the pileus: *flesh* and juice, orange-coloured, changing to green on exposure.—This is called the Orange-milk Agaric, and is much esteemed in Italy, where it is exposed in the markets; and Sir J. E. Smith, who met with it in prodigious quantities in the market of Marseilles, speaks of it as the most delicious mushroom known; nevertheless, others speak of it as being more or less acrid, though much esteemed. The best way to cook them is, after duly seasoning with pepper and salt, to put a piece of butter upon each, and to bake them in a closely covered pie-dish for three quarters of an hour. (*Badham.*)

6. *A. excoriatus.*—*Stipes* smooth white, tapering upwards, three inches high, hollow, with a fine loose silky pith and a permanent ring: *pileus* convex, bossed, tawny, the outer skin tearing as the plant enlarges; two to three inches over: *gills* loose, white, the edges finely serrated: *flesh* white.—This kind is nearly related to *A. procerus.* It is found under trees in the autumn, and is very wholesome: it makes a fine ketchup.

7. *A. exquisitus.*—*Stipes* from two to five inches long, solid, whitish, furnished with a strong persistent collar: *pileus* fleshy convex, white or pale yellowish, mostly smooth, four to twelve inches broad or more: *gills* numerous, broad, whitish or very pale flesh colour, changing to deep purple-brown: *flesh* thick, white, changing yellowish on being cut, and in some cases exuding a yellow juice.—This is the largest of English Agarics, and is more commonly known under the name of *Agaricus Georgii*, or the horse-mushroom: one of these has been known to weigh 14 lbs. This species is decidedly inferior to the common mushroom; it may be eaten in moderation, cooked in the same way as the mushroom; and when young is sold under the name of White-caps for making ketchup. It is met with in meadows, woods, and near buildings, frequently in autumn.

8. *A. fusipes.*—*Stipes* four to five inches high, tapering downwards, ribbed, varying singularly both in length and breadth: *pileus* fleshy, with large hollows and protuberances, dirty white deeply tinged with reddish brown, sometimes set almost parallel to the stem: *gills* free, serrated, dirty white, rusty brown at the edges: *flesh* spongy.—This species is frequently found in summer and autumn, after rain, at the foot of old oak trees, growing in clusters. The young plants make an excellent pickle; and the full grown ones are good dressed in any of the same ways as the mushroom.

9. *A. heterophyllus.*—*Stipes* naked, variable in length and size, white like spermaceti, meshed like the pileus with minute meandering lines: *pileus* from four to five inches across, very variable in colour, the margin irregularly elevated and depressed, at first convex then more or less excavated towards the centre, mostly smooth, more or less moist, never scored, but marked by raised lines, which frequently cross so as to present a finely reticulated network.—This species grows in great abundance during the summer months generally. It is excellent and very wholesome, but there must be no delay in dressing it, as insects are very fond of and soon devour it; the flesh being very tender, requires but slight cooking.

10. *A. melleus.*—*Stipes* fibrous, enlarged above and below, from one to ten inches long: *pileus* dirty yellow, more or less hairy: *gills* somewhat decurrent.—This, which is recommended by continental writers, is nauseous and disagreeable however cooked—though not poisonous.

11 *A. nebularis.*—*Stipes* from two to four inches long, incurved at the base, firm externally, softer within; *pileus* at first depressed convex, then nearly flat; margin at first involute, smooth, viscid when moist, grey-brown at the centre: *gills* cream coloured,

narrow, decurrent, unequal: *flesh*, thick, white, unchanging.—This species is called the new cheese agaric, from its having an odour like that of curd cheese. It is regarded as rare, appearing in autumn. The flesh is very delicate and light of digestion, and requires but little cooking, whether broiled, fried, or stewed.

12. *A. orcella.*—*Stipes* short, solid when young in the centre, and somewhat enlarged at the base, but when older from the irregular growth of the pileus it becomes excentric, often with a lateral twist towards the base: *pileus*, irregularly lobed when mature with undulating borders, soft and smooth, sticky in wet weather; from two to three inches across, one side growing faster than the other: *gills*, decurrent, at first white, afterwards salmon colour.—This is a very delicate mushroom, growing amidst the grass of woods and pastures, either solitary or in company, sometimes in rings; it is found occasionally throughout the summer, but its proper season is the autumn. It should be eaten the same day as gathered, either stewed, broiled, or fried. The plant has a peculiar smell, resembling that of cucumber rind or syringa leaf, in which respect it resembles no other fungus.

13. *A. Oreades.*—*Stipes* solid, firm, cylindrical, thickest under the pileus, white, rarely central: *pileus* convex or rather obtusely conical, generally umbonate, irregular, one to two inches broad, buffish, at length nearly opaque white, coriaceous: *gills*, distant, rather broad, buffish white.—This is the Champignon, and frequently forms fairy-rings; it is common everywhere, and comes up in successive crops in great profusion after rain. The flavour is excellent; but independent of this, two circumstances give it an additional value in a domestic point of view, namely, the facility with which it may be dried, and its very extensive dissemination. When dried, which may be effected by two or three days, exposure to a drying air, the champignon may be kept for years without loosing its aroma or goodness; in fact the dried fungus imparts more flavour to the dish to which it is added, than when used in a fresh state, though the dried flesh is more leathery and less easy of digestion. The aroma is dissipated by over-cooking; it should therefore be thrown in (to soups, gravies, &c.) only a few minutes before serving. Two deleterious kinds have been mistaken for this:—*A. dryophyllus*, which has a *hollow* stipes, numerous *white* or *pale yellow* gills, and a *depressed fragile* pileus; and *A. semiglobatus*, which has a *very viscid fistulose* stipes, broad gills *perfectly horizontal to the stem*, and a *shining smooth viscid* pileus.

14. *A. ostreatus.*—*Stipes* solid, very short, sublateral or often wanting: *pileus* smooth, fleshy, dark grey, then brownish, at length pale, plano-convex with the margin rounded and involute, from one to eight inches broad: *gills*, numerous, whitish, decurrent, anastomosing at the base: *flesh* fibrous, moderately firm.—This species occurs on the trunks of trees, both in spring and autumn, and generally grows in a tufted form, very rarely single. Withering compares the form of the plant to an oyster hollowed underneath. It may be dressed in any of the more usual ways, but as the flesh is rather over solid and tough, it is all the better if cooked leisurely over a slow fire.

15. *A. personatus.*—*Stipes* firm, bulbous, from one to three inches high, clothed more or less with villous fibrillæ: *pileus* convex, very smooth and shining, not viscid, from two to six inches broad, pale bistre: *gills* rounded, free, narrow in front, paler than the pileus.—This species bears the trivial name of Blewitts (? Blue hats, *A. Georgii* being called White caps, and *A. Oreades*, Scotch bonnets). It is extremely common in England, and is found amidst grass, growing in clusters or large rings, seldom appearing before October; it is produced in the markets. The odour is like that of *A. Oreades*, but rather overpowering; taste pleasant. It is apt to imbibe moisture in wet weather, and should not therefore be gathered during rain; at all other times it is a firm fungus, with a flavour of veal, like which it is to be dressed with savoury herbs, and the usual condiments, and the more highly seasoned the better.

16. *A. piperatus.* — *Stipes* solid, thick, white, one to three inches high: *pileus* depressed, becoming funnel-shaped, more or less waved, three to seven inches broad, white a little clouded with umber: *gills* very narrow, crowded, repeatedly dichotomous, cream coloured: *juice* abundant, white like milk, excessively acrid and bitter.—When raw this fungus is very acrid, but Dr. Badham states, that it looses its bad qualities entirely by cooking, and that it is very extensively used on the continent, where it is preserved for winter use, by drying, or pickling in a mixture of salt and vinegar.

17. *A. procerus.*—*Stipes* long, cylindrical, bulbous, scaly, with a free annulus: *pileus* broadly umbonate, three to seven inches broad, scaly, the surface resembling shaggy brown leather, dingy white, the scales dark scurfy: *gills* distant, whitish, ventricose, remote from the stalk: *flesh* white, and cottony, turning to rufous orange where bruised. —A fine agaric, found in open woods in the autumn. In some of the Highland birch woods it grows in prodigious abundance.

Withering states, that when preserved in pickle it is very liable to run into the vinous fermentation. It makes excellent ketchup, according to Badham.

18. *A. prunulus.*—*Stipes* white, solid, robust, somewhat irregular: *pileus* three to six inches across, thick, convex, irregular in shade, more or less tuberculated, cream or dirty nankeen coloured, paler in the centre, soft to the touch, fragile: *gills* watery, white, very numerous, connected by a tooth to the end of the stalk.—This is one of the most savoury of the fungi; it has a strong scent. It is readily distinguished from the fungi, by its mode of growing in circles, the extreme narrowness of its gills, and the thickness of its pileus; it moreover appears only in spring, when but few species are met with. It occurs in pastures, and is very prolific, one ring producing from eight to twelve pounds weight. It may be prepared in any of the ways adopted with the common mushroom, and has the recommendation of appearing in spring, when that is never found. It is also dried and preserved for use; the fresh form is perhaps better than the dried, being more tender, but in this state it imparts a very rich flavour to gravies, soups, &c. It is generally dried by being cut into four pieces, and exposed for some days to dry air, and is then threaded. This fungus is much prized in Italy, where it is extensively dried, and sold on strings.

19. *A. ruber.*—*Stipes* short, brittle, white blotched with purple stains: *pileus* rather fleshy, hemispherical, afterwards obtusely convex and subsequently depressed, dry in dry weather, sticky in moist weather, of various hues—tawny, purple, olive green, ochraceous yellow, and several of these united: *gills* fragile, thick and broad, cream coloured, connected below by transverse veins: *flesh* tender, white, slightly rufescent when cut.—This species grows abundantly in woods, from July till a late period in autumn. *A. alutaceus* and *A. emeticus*, two allied acrid kinds, may be distinguished from this—the former by its buff gills and pungent acridity, the latter by its snow-white gills, and extreme acrimony.

20. *A. rubescens.*—*Stipes* bulbous, sometimes scaly, at first stuffed, subsequently hollow with a wide ring marked with striæ; *pileus* convex, covered with various sized warts, and with even margins: *gills* attenuated behind: *flesh* turning obscurely red, when cut or bruised.—This species grows in woods, in considerable abundance, both in summer and autumn. It is very delicate, and makes excellent ketchup.

21. *A. vaginatus.*—*Stipes* six inches high or more, attenuated upwards, with a volva adnate to its base, closely surrounding it above as in a sheath, hollow, or stuffed with fine cottony fibres: *pileus* four inches or more broad, fleshy, plane slightly depressed in the centre, furrowed at the margin, viscid when moist, beautifully glossy when dry; *gills* free, white, ventricose, broadest in front.—This occurs not uncommonly in woods and pastures from August to October. Being delicate and tender, it must not be over-dressed.

22. *A. violaceus.*—*Stipes* about four inches high, minutely downy, grey tinged with violet, with a fugaceous veil of fine threads: *pileus* four to six inches broad, obtuse, deep violet coloured, covered with soft hairs; *gills* deep violet changing to tawny; *flesh* thick and juicy.—It occurs, but not very commonly, in the autumn, in woods, particularly under pine and fir trees. It may be dressed either with a white or brown sauce.

23. *A virescens.*—*Stipes* short, compact, stuffed with cottony fibres: *pileus* flatly convex, then depressed, whitish, dry, coated over with a thick stratum of opaque meal, which gradually breaking up as the pileus expands, maps it in a singular manner with a series of polygonal figures: *gills* very brittle, white.—This fungus is very delicate, but not common in England. It is best cooked on the gridiron.

24. *A. virgineus.*—*Stipes* white, tapering downwards, hollow: *pileus* white, one or two inches broad; margin involute when young, then expanded, depressed in the centre: *gills* white, deep connected with veins.—This is a small but graceful little Agaric, of pleasant taste, but disagreeable odour: they grow in pastures, and are common in autumn.

25. *A. ulmarius.*—*Stipes* thick solic elastic, downy at the base: *pileus* dirty white, turning to pale rusty, more or less orbicular: *gills* yellowish, broad, thick, ventricose: *flesh* white, compact.—This species grows on the elm, and is met with rarely in the autumn. The taste and smell are agreeable: it dries well, and may be kept for a long time without spoiling.

BOLETUS.—*Pileus* always with a central stipes: *hymenium* tubular, the tubes separable from the substance of the pileus, and from each other.

26. *B. edulis.*—*Stipes* thick, four to six inches long, reticulated: *pileus* convex, from six to seven inches across; smooth, yellow or brown: *tubes* nearly free, roundish, minute, whitish, at length yellowish: *flesh* white, not changing colour.—This Boletus is frequent in woods, in the autumn. Its tender and juicy flesh, and delicate and sapid flavour, strongly recommend it. Mr. Berkeley says, that "though much neglected, it appears to be a most valuable article of food, resembling in

taste the common mushroom, and quite as delicate; moreover it abounds in seasons when the common mushroom is not to be found in any quantity."

27. *B. scaber.*—*Stipes* four to six inches long, firm, attenuated above, scabrous: *pileus* two to five inches broad, convex, glabrous, humid, somewhat glutinous, of various colours —orange-red, brownish, olivaceous, livid, or dark grey: *tubes* free, round, whitish: *flesh* thick and flabby, white, sometimes turning blackish.—This fungus abounds in woods and shaded fields in the summer and autumn. When cooked in the same way as *B. edulis* it has an agreeable flavour; but being more viscid in substance, it requires when stewed to be thinned with water: when dried it loses all odour, and is then insipid and unfit for food. *Boletus luridus*, a poisonous species, has the tubes yellow, and the flesh yellowish, instantly changing to blue.

CANTHARELLUS. — *Hymenium* veined: *veins* dichotomous subparallel, sometimes anastomosing.

28. *C. cibarius.*—*Stipes* one to two inches long, solid, attenuated at the base, of the same colour as the pileus: *pileus* fleshy, irregular, smooth, two to four inches broad, yolk-of-egg yellow, but varying in shade: *flesh* white, fibrous, dense, scentless when recent, but in a few hours smelling like ripe apricots; when raw it has the pungent taste of pepper.—It is found under trees, and in the borders of fields, growing sometimes sporadically, sometimes in circles or segments of a circle, and may be found from June to October. At first it assumes the shape of a minute cone; next, in consequence of the rolling in of the margin, the pileus is almost spherical, but as this unfolds it becomes hemispherical, then flat, and at length irregular and depressed. Being naturally rather dry and tough, this fungus requires a considerable quantity of fluid sauce to cook it properly: perhaps it is best when minced and stewed; it requires to be gently stewed for a long time to make it tender. The common people in Italy dry, or pickle, or keep it in oil for winter use. The quantity of this fungus which is produced is sometimes immense. It is called the Chantarelle.

CLAVARIA.—*Plants* carnose, cylindrical, simple or branched: *hymenium* smooth, occupying almost the whole surface, confluent with the stipes.

29. *C. coralloides.* — *Plants* white, two to four inches high, with erect stipes, and elongated, irregular, unequal, mostly acute *branches*. Sometimes violet coloured at the base.—This is the most abundant species; it is found on the ground in shady places, and after much rain generally in the autumn.

30. *C. grisea.*—*Plant* one to four inches high, cinereous, often with a bluish tinge, with thick short *stipes*, and unequally incrassated, rugose *branches.*—It is frequent on the ground, in woods, or among grass, in moist or shaded places.

31. *C. cristata.*—*Plant* one to three inches high, white or cinereous, tufted, branched, smooth, the *branches* dilated at the summit. —This is found in woods in the autumn.

32. *C. rugosa.*—*Plant* one to three inches high, white, solid, but hollow in old plants; thickened, or club-shaped; simple, or divided into a few obtuse unequal branches.—Common in the autumn on the ground in woods, and in moist shady places.

The Clavarias enter more or less largely into the supplies of the Italian markets. Dr. Badham gives the following mode of dressing them: — Having thoroughly cleansed away the earth, which is apt to adhere to them, they are to be sweated with a little butter, over a slow fire; afterwards to be strained, then (throwing away the liquor) to be replaced to stew for an hour with salt, pepper, chopped cloves and parsley, moistening with plain stock, and dredging with flour occasionally. When sufficiently cooked, to be thickened with yolks of eggs and cream. The saucepan should be covered with a sheet of paper under the lid, which keeps the Clavarias white, and also preserves their flavour.

FISTULINA.—*Hymenium* formed of a distinct substance, but concrete with the fibres of the pileus: *tubes* at first wart-like, somewhat remote, radiate-fimbriate, closed, at length approximated, elongated, open.

33. *F. hepatica.* — *Pileus* confluent with the stalk; at first studded on the upper side with minute papillæ, which afterwards disappear: *tubes* continuous with the flesh of the receptacle, unequal, short, small; at first with closed pores, but becoming spreading; colour at first a dusky white, afterwards yellowish red; the whole surface more or less sticky; *flesh* succulent, fibrous, like beet-root in appearance, with a vinous smell, and a slight acid taste.—The Fistulina grows on trees, principally oaks, and may be found abundantly throughout the summer months. It varies in size from that of a small kidney to an irregular mass of many pounds weight, and of several feet in circumference. No fungus yeilds a richer gravy; and though rather tough when grilled, it is scarcely to be distinguished from broiled meat. The best way to dress it if old, is to stew it down for stock and reject the flesh; but if young it may be eaten in substance, plain or with minced meat.

HELVELLA. — *Pileus* submembranaceous, irregular, smooth on each surface, deflexed at the sides: *hymenium* occupying the whole outer surface.

34. *H. crispa.* — *Stipes* fistulose, deeply pitted and ribbed, three to five inches high, snowy white: *pileus* whitish, flesh coloured, deflexed, lobed, crisped.

35. *H. lacunosa.*—*Stipes* fistulose, pitted and ribbed, white or dusky: *pileus* inflated, cinereous, lobed, the lobes deflexed, adnate.

These Helvellas are found in woods, or on the stumps of old trees; the former being more common, and also preferable to the latter. They have all an agreeable odour, and bear a general resemblance in flavour to the morel.

HYDNUM.—*Hymenium*, consisting of soft subulate spines.

36. *H. repandum.* — *Stipes* one to two inches long; thick, unequal, expanding into the pileus: *pileus* irregular, repand, sometimes almost lobed, two to six inches broad, tawny red, smooth, brittle. *Subulate processes* unequal, pale, mostly entire: *flesh* pale, not changing.—Frequent in woods in the autumn; sometimes growing solitary, but more frequently gregariously and in rings. In Italy it is sold promiscuously with the Chantarelle, (*Cantharellus cibarius*,) which it resembles. It should be well cooked with plenty of sauce: when well stewed it is an excellent dish, with a slight flavour of oysters.

LYCOPERDON. — *Sporangium* globose: peridium single membranaceous, scaly with warts or soft spines, bursting irregularly at the apex, and containing a mass of sporules and filaments.

37. *L. plumbeum.* — Globose, when full grown as large as a walnut; with two coverings, the outer white, loosely membranaceous and fragile; the inner (peridium) tenaceous, smooth, grey-lead colour externally, more or less shaggy internally.—Abounds in dry places in spring, summer, and autumn.

38. *L. bovista.*—Turbinate, three to four inches broad, whitish, plicate beneath, scales broad, often indistinct.—It occurs in pastures in the autumn. It requires to be soon eaten, for in a few hours the compactness of its flesh is gone. It may be cut in slices and fried in eggs and bread-crumbs.

MORCHELLA. — *Pileus* lacunose (pitted), confluent with the stipes, either at the margin or a little above it: *hymenium* occupying the whole outer surface.

39. *M. esculenta.* — *Stipes* hollow, white, dilated towards the base: *pileus* roundish or oval, cellular, like a honeycomb, closely contracted round the stipes: *plant* one to four inches high.—This is the well known Morel: it occurs in woods and fields, late in the spring, preferring a calcareous or argillaceous soil. An allied kind, much less common, is called *M. semilibera*, and has the pileus detached from the stipes for half its length. Neither should be gathered after rain, as they are then insipid, and soon spoil. The following is a good mode of cooking morels:—Wash and cleanse them from the earth which collects between the plaits, and dry them thoroughly in a napkin; put them in a saucepan with pepper, salt, and parsley, adding, or not, a piece of ham; stew for an hour, pouring in occasionally a little broth, to prevent burning; when done, bind with the yolks of two or three eggs, and serve on buttered toast. The Italian method is thus:—Wash, dry, and divide them across; put them on the fire, with some parsley, scallion, chervil, burnet, tarragon, chives, a little salt, and two spoonfuls of fine oil; stew till the juice runs out; then thicken with a little flour, and serve with bread-crumbs and a squeeze of lemon.

TUBER. — *Plant* stemless; fleshy, solid, not becoming powdery, nor opening at the top.

40. *T. cibarium.*—Plant nearly globular, of the size of a large plum, rarely as large as a hen's egg; rootless; rough and warty externally, and of a dark colour, internally firm, white while young, but when old becoming dark coloured with whitish veins.—This is the famed Truffle; it is a subterranean fungus, growing naturally some inches below the surface, and found in various parts of England in high woods and pastures. It is one of the best and dantiest of the esculent fungi. Dogs are taught to hunt for it, and they point it out by barking and scratching. Various attempts have been made to cultivate the truffle artificially, but hitherto with very limited success. Mr. Tillery, gardener to the Duke of Portland at Welbeck, has, however, been to some extent successful. Another nearly related species (*T. albideum*) is also employed. The truffle is prepared and used in a manner similar to the morel.

In his *Treatise on Esculent Funguses*, Dr. Badham includes some species of *Polyporus*, *Peziza acetabulum*, and *Verpa digitaliformis*, neither of which are of much value in an esculent point of view.

EVERGREEN STANDARD TREES, AND ITALIAN GARDENS.

WHEREVER the Italian style of gardening is introduced, with its terraces, straight walks, mock avenues, and other formal arrangements, standard evergreen trees are desirable accompaniments. The orange tree is one of the most favourite trees for the purpose; and in Italy, of course, it may be thus employed with little trouble or inconvenience, on account of the Italian climate. In some of the first-rate garden establishments in this country, where orangeries are maintained, a very similar course is followed,—the orange trees being set out in the situations alluded to, during the summer season. It is not, however, generally known, that the common hardy Laurel, and the Portugal Laurel, may be used as substitutes for the orange, to produce the effect for which they are introduced to Italian gardens. Such, however, is the case, and the difficulty of preserving orange trees, therefore, need be no bar to the construction of Italian gardens by persons of limited conveniences.

We are not about to compare the formal aspect of an Italian garden with the naturalness which is characteristic of the prevailing English style of gardening, nor to recommend one at the expense of the other. Italian gardens are quite in character in certain situations, such as in the vicinity of buildings of the Italian style; but whether of greater or less extent, they should form detached scenes. Into the composition of such gardens, formal, mostly round-headed evergreen trees, almost necessarily enter; such trees are set at equal distances by the sides of walks, forming avenues in miniature; or they are set with equal formality, though less continuity, at the angles and conspicuous points, which they serve to mark. For this purpose, the laurels are almost equal to the orange tree itself; and as must be obvious to the merest casual observer, they may be employed in nine cases out of ten, when the latter would be altogether out of the question. The gratification afforded by an Italian garden, or at least by the appropriate introduction of Italian scenery, may, therefore, by their agency be extended to a greater number than could otherwise hope to enjoy it. The Portugal Laurel is perhaps to be preferred for the purpose to the common kind, being more tree-like in its habit.

The formation of the plants is nothing more than a work of time. In the first place, young, healthy plants are chosen, and those must be selected which have a leading shoot; this must be encouraged; the lower branches gradually reduced, and the leader as sedulously maintained, until a clear straight stem, free from branches, and of the requisite height—five or six feet—is obtained; the head is, of course, then formed by continued and close pruning, or stopping back. The plants are stationed in this way:—large tubs "without bottoms" are placed permanently in the situations the plants are to occupy; they are then filled with good soil, and the young standard trees planted in them, the roots being confined within the limits of the tub, till they descend to the surface of the ordinary soil, where, having room to spread with freedom, they luxuriate, the trees become vigorous, and being frequently, almost continually, kept pruned or pinched back, they form compact round heads, which in appearance, at a little distance, very much resemble an orange tree, and serve equally well as to the effect produced.

The Portugal Laurel (*Cerasus lusitanica*) is perhaps the most elegant of the two kinds of laurel for this object, and also the most suitable; but even the common laurel (*Cerasus Lauro-cerasus*) may be employed with very good effect, notwithstanding its more shrubby character. The foliage of either of these trees, as is well known, is bold and striking, and this is just what is wanted; for it is the form and foliage of the tree, more than any gaiety of flowering, which is required to produce the effect sought for.

The Laurustinus (*Viburnum Tinus*,) might be employed to form smaller trees, such as are called half-standards, that is, with stems about three feet high. A well-furnished plant would not only look well as an evergreen during the greater part of the year, but would, in addition, look exceedingly handsome, when covered with its snowy blossoms in the early part of winter.

The Arbutus (*Arbutus Unedo*, and others), though less free growing than the preceding, might without much difficulty be moulded into the form required; and, in addition to any beauty they may possess as evergreens, they would be ornamented during winter with a double crop,—a batch of waxy, greenish-white flowers, and handsome pendent scarlet strawberry-like fruit.

Another plant which would form a good companion for the Laurustinus, is the *Daphne hybrida*, a species of free growth, with dark-green glossy leaves, and almost uninterruptedly covered with small tufts of purplish flowers, which are not indeed remarkably showy, but make up for this by their delicious sweetness. This plant might be grown to form a handsome half-standard.

Nothing certainly can be handsomer as artificial objects than the standard Rhododendrons, raised in some of the leading nurseries for American plants; and such plants of Rhododendrons might be obtained and introduced with propriety and good effect in the situations we allude to. Of course, they would have to be treated with some reference to their natural habits and characters. Such trees as these are magnificent when in bloom, and at other times, being evergreen, would serve the same purposes as orange trees, or their substitutes, the Portugal laurels.

One further hint may be worth offering: of course, when the roots of free growing plants, such as those which have been referred to, are confined within such narrow limits as in this case they would be, there is a possibility, that as the plants become old, and the roots have taken up most of the nutriment within their reach, the leaves would become yellow and sickly-looking. Now, this would be positively opposed to the object in introducing such plants at all; and it would be better to do without them altogether, than to have them in a miserable plight. This, therefore, must be avoided. There is perhaps no better or easier way to do this than to use liquid manure during summer (of course, abundant supplies of water, also, will be required). Guano water, or water in which some of the nitrates, as nitrate of soda and potash have been dissolved, will serve the purpose. Soot water would also be found a good form of liquid manure for this purpose.

NATURE'S HINTS TO FLORISTS.

How singular but unerring a lesson is given us in the constant struggle of nature to resume her sway! When man has been permitted to lead her out of her usual course, whether it be in the crossing of the races of animals, or the hybridizing or high cultivation of flowers and plants, the animal and vegetable kingdom alike yield to the constant attention and skill of man, and alike revert to their own original character the instant man relaxes in his care. Does it not seem a beautiful object of contemplation that man is rewarded for his skill and ingenuity in being sanctioned in his endeavours to improve the races of animals and vegetables? Here is a fact which speaks volumes. Nature scatters her beauties in abundance, but all things have individually only a small share; man is endeavouring to collect the shares of many subjects into one individual. Agriculturists obtain by cross-breeding and high feeding the good points of several animals in one; the gardener obtains in a single fruit the good qualities of several; the florist rests not until he has monopolised in a single flower the good qualities that have been divided among many. Take any popular subject for an illustration: to the Rhododendron family nature has been bountiful, but her favours have not been lavished on one; to R. ponticum she has given the valuable quality of hardiness, but the flower is mean, the foliage poor; to arboreum she has given a brilliance of colour not to be surpassed. The florist has by means of his art and science so cross-bred these two kinds, as to have obtained in one individual both the hardiness and the brilliant colour; and having attained this object, he is permitted to multiply the new branch of the family to any extent, and the subject is established in perpetuity. Plant out one of the individuals wherever it will grow, and it will not degenerate, as man calls it; it will not revert to its former ill-shaped, mean looking flower and foliage on the one hand, nor will it loose its hardiness on the other. But man is permitted to go farther than this; by a different mode of culture he is allowed to increase the vigour of a plant, and by seeding from it in the state of excitement, to produce a disposition to sport; to select from the progeny such as deviate from the natural habit, and, according to his finite notions, are improved in form, texture, or colour, and by bits from the plant itself to multiply the same thing to any extent; but as this is no longer concentrating the individual beauties which nature had already supplied, but creating out of her abundant powers new ones contrary to the original properties of the plant, the instant man relaxes his watchfulness, and withholds that management which has produced the change, he loses the character which he has established. But we have yet one feature in this change that rarely enters the mind of the thoughtless. The change is wrought. The individual variety is multiplied, and passes into the hands of the idle, as well as the industrious; the former puts his pet plant into the ground and leaves it there, uncared for, unattended; the latter continues the care which produced the change. The idle one sees nature claiming her wandering subject, and the flower go back as near as may be to the original simple form; the industrious florist preserves his in all its beauty and integrity. To bring this home by example: the Pansy has been changed from its native deformity—if it be not impious to call anything in nature deformed—to a bold, circular, velvety, rich flower; continue propagating by cuttings and rich feeding, and it remains true. Plant it out on poor, natural soil, and leave it untouched, and it will go back to a form, and diminish to a size, that no florist would tolerate in his garden. Pinks, carnations, and picotees, are in this particular the same; place them in natural ground, and leave them there; and you will see them diminish in size and doubleness, and get worse in form, until they become like wild ones, instead of garden varieties. Again, sow seed from any of these highly bred flowers; nature struggles so hard to regain her sway, that nine-tenths of the seedlings are more like the original flower than like the improved one. The vigilance of the florist is obliged to step in; he destroys all that go back a single step, and retains only those which maintain their improvement. Let him save seed from the whole collection, bad and good, and his relaxation this one season is fatal. They will nearly all be degenerated, as we thoughtlessly call it, meaning, however, they will have gone back nearly to their original state. It would seem as if it were designed for an important lesson. Assiduity, skill, and perseverance, are rewarded by the accomplishment of great objects. After they have been accomplished for the benefit of all who desire to enjoy them, they are preserved to the careful, and lost to the idle man. Nobody can look with indifference on these things; they may be idle, careless, vicious, and not look at all; but if they do look, they must see in them the language of a monitor. No matter to what flower we turn, wherever there has been attained the greatest alteration from nature, there will be found the necessity of exercising the greatest vigilance. The finest pansy, pink, carnation, picotee, tulip, auricula, ranunculus, polyanthus, anything greatly improved by culture, may be placed side by side, and left a season or two, and nobody would know them again; and supposing there were none but them to show what had been done; it would take many years to recover the loss and retrograde movement of two neglected seasons.

AN ABSTRACT OF REPORTS, PAPERS, AND PROCEEDINGS OF THE HORTICULTURAL SOCIETY OF LONDON, WITH NOTES BY A PRACTICAL GARDENER.

TRANSPLANTING LARGE FOREST TREES IN PARKS.—This is a country abounding with stone, and as my quarries, out of which I was building a new mansion, afforded much refuse stone in large lumps, I made a trial by planting some trees of about eight feet high, and placing at their feet two two-horse cart loads of rough lumps of stone, not built up high, but, packed close by each other, and set on edge so as to make a tabular, but very rugged surface round the foot of the tree, and extended to the distance of four feet. These trees succeeded well, and far beyond my expectation. On considering the cause of their success, it appeared to me that the stones served the three purposes of fencing, staking, and mulching: the first of which is always necessary, to defend them from the assaults of cattle: the second is equally so, if the plants are tall, to save them from being displaced by winds after they shall have taken fresh root: and the third, also, is necessary in case of a dry summer, the first after the transplantation of the trees, to protect the soil from over drought, whilst they are striking fresh root into it. The stones placed as I have described are a sufficient fence against horned cattle, which, having feet made for going upon soft ground, will not mount the rugged surface of the stones. Sheep and deer will scarcely annoy trees whose bark has acquired roughness; but they may be easily repelled by a few thorns bound round the lower part of the stems. Nor will common horses go upon the stones, or endeavour to reach the trees and tear off the bark. But against high bred horses, which are disposed to attack everything of wood, the stones are not a sufficient fence, unless they are packed with a surface very rugged, and extended six feet round the tree. Against displacement by winds, the stones are a better security than can be provided by any manner of staking and binding; for they are a power always in action by their weight, and the surface of the soil is shaded by them from the too great power of the sun, whilst the rains sink through and encourage the roots to sprout afresh and extend themselves through the soil: thus they serve the purpose of mulching. The weight of the stones, as a security against displacement by winds, excels any staking, because it is constantly in action: once sufficient, is always so: but the bandage with which the tree is secured by staking often decays and becomes loosened, and the tree is displaced before the failure of the bandage is discovered and repaired. Besides, I have observed, upon taking up some young trees, which upon a former transplantation in the nursery had been staked, that the part of the stakes sunk in the ground had, in their course of decay, produced a mouldiness in the soil about them, and the trees had refused to strike fresh roots in that direction; or, if they had struck any, the mouldiness in the soil had caused them to decay. The best trees to plant out are certainly those whose roots and heads have been properly trained by pruning and cultivation, in a nursery: such may be planted out at greater ages and sizes than trees taken from plantations of a few years growth, and will both strike fresh root more certainly, and grow faster. Autumn, immediately that the leaf is fallen, is the best season for the work; and, by careful practice, according to the method above described, I have had perfect success in transplanting trees of from eight to twenty feet high. —*Letter by Sir C. M. L. Monck, Bart.*

[There can be no doubt that the pressure of the even weight of mould and stone all over the roots is better than stakes would be; but unless stones be handy to the premises it would be expensive, and the stakes must be resorted to.]

HORTICULTURAL HINT.—Experiments have been made, which proved that both walnut and mulberry trees may be readily made to produce fruit at three years old from cuttings; and there appears every reason to believe that the same mode of culture would be equally successful in similar cases.

Wall trees.—In training wall trees there is much in the modern practice which appears defective and irrational: sufficient attention has never been paid to the form which the species or variety naturally assumes; and be its growth upright or pendent, it is constrained to take precisely the same form on the wall.—*Knight.*

Glass-houses.—The construction of forcing houses appears to be generally very defective, and two are rarely constructed alike, though intended for the same purposes; probably not a single building of this kind has yet been erected, in which the greatest possible quantity of space has been obtained, and of light and heat admitted, proportionate to the capital expended. It may even be questioned, whether a single hot-bed has ever been made in the most advantageous form; and the proper application of glass, where artificial heat is not employed, is certainly very ill understood. —*Knight.*

Manuring.—Every gardener is well acquainted with methods of applying manure with success to annual plants; for these, as Evelyn has just observed, "having but little time to fulfil the intentions of nature," readily accept nutriment in almost any form in which it can be offered them; but trees being formed for periods of longer duration, are frequently much injured by the injudicious and excessive use of manure. The gardener is often ignorant of this circumstance; and not unfrequently forms a compost for his wall trees, which, for a few years stimulating them to preternatural exertion, becomes the source of disease and early decay. It is also generally supposed that the same ingredients, and in the same proportion to each other, which are best calculated to bring one variety of any species of fruit to perfection, are equally well adapted to every other variety of that species: but experience does not justify this conclusion; and the peach in many soils acquires a high degree of perfection where its variety, the nectarine, is comparatively of little value; and the nectarine frequently possesses its full flavour in a soil which does not well suit the peach. The same remark is also applicable to the pear and apple; and as defects of opposite kinds occur in the varieties of species of fruit, those qualities in the soil which are beneficial in some cases will be found injurious in others. In those districts where the apple and pear are cultivated for cyder and perry, much of the success of the planter is found to depend on his skill, or good fortune, in adapting his fruits to the soil.—*Knight.*

Onions.—The seed is sown on a slight hot-bed in the second week in March; the plants, when up, are exposed to the air whenever the weather permits, and in the last week in April they are planted out in the following manner:—Deep drills are made on a piece of well-dug ground, fifteen inches asunder, and the drills are filled with good compost of equal parts of sandy loam and rotten dung; the plants, being drawn carefully from the bed, are placed in these drills, at twelve inches distance from each other, their fibres only being covered with the mould, and the entire bulb kept above ground. When planted they receive a gentle watering, which is continued daily, unless rain falls, till the roots have got hold of the compost; they are afterwards hoed, when necessary, and occasionally watered till they are fit to take up.—*Mr. Thomas James.*

Preserving Grapes till very late in the season.—The grapes are ripened in the vineries under the glass, but without any artificial heat. In the autumn, as soon as the weather becomes damp, light fires in the flues about nine or ten o'clock in the morning, giving plenty of air at the same time. The fires are put out in the afternoon, and the houses are closely shut up at night. This is continued daily, as long as the crops of grapes remain in use. The fire in the day, aided by the circulation of the air, renders the whole interior of the houses perfectly dry, so that no damp exists in them when shut up; a night fire, on the contrary, with the houses closed, creates a vapour, which causes the fruit to become mouldy, and to decay.—*Mr. J. Thompson.*

Grafting Pears upon Quince stocks.—One great improvement in the cultivation of the pear, is a method practised many years ago, but not generally enough adopted; that of the choice sorts being grafted upon the quince, by which they come several years sooner into bearing, and produce much better crops than those upon the common or free stock. I have had opportunities of seeing the superiority of the quince stock in three different counties, and with as many different sorts of soil, and have not found any disadvantage whatever in it, although some disapprove the use of it. I think the objections are made only by those who have not given the two sorts of stocks a fair trial. Pears on the quince require less wall room at planting; but an equal space of wall, occupied by trees on quinces, will produce from three to five times the quantity of fruit which could have been obtained from trees on free stocks, and in some cases still more, and the fruit will be in no respect inferior.—*Mr. T. Torbron.*

Late Celery.—John Wedgewood, Esq. has stated that he made a plantation of celery, late in the year, from the seedling plants which had remained in the seed-bed till they had grown to considerable size. The plants thus removed not only took well, but had the advantage over those planted when very young, as is customary, in growing stronger as well as being sooner fit for use.

CONTEMPORARY WRITINGS,

AND ORIGINAL NOTES CONNECTED WITH HORTICULTURE AND NATURAL HISTORY.

Standard climbing roses.—One of the prettiest forms in which many of the climbing roses may be introduced to the garden, is that of a standard. Those varieties which make shoots of moderate length, produce, when worked on a straight stem of five or six feet high, and allowed first of all to form a broad expansive head, and then to assume a naturally drooping habit, a surpassingly beautiful effect, the long carelessly pendent branches forming so many festoons of roses. On lawns the effect of tree-roses thus flounced and wreathed, is excellent. Such plants must have but little pruning; and that little confined to the shortening of any casual over-luxuriant shoots, and the cutting clean away any such as become old and worn out. In other respects, the plants must be left to nature. Many of the varieties of Boursault roses are well suited for this purpose; as also are some of the Sempervirens, or evergreen group.

Preserving garden seeds.—This is a question upon which gardeners and their employers often differ in opinion, the latter often thinking that, in an economical point of view, the matter is one of importance. With respect to ordinary garden seeds, that is to say, the bulk of the seeds required in a garden to produce the necessary crops, whether culinary or floral, there cannot be a greater mistake than to suppose that any advantage can be derived from the practice of saving them in private gardens. Seed-growing is a distinct branch of trade; and owing to competition, seeds are brought to market at the lowest remunerative prices. Those who grow seeds to supply the market, moreover, are enabled to bestow that attention which is necessary to secure a genuine article. All our kitchen garden crops, and the more popular flowers, are in a highly artificial state, induced by high culture. Speaking in a general sense, it would be next to impossible to grow these crops over and over again from the same stock, and on the same soil, without deterioration; they would, in fact, return gradually, and more or less rapidly, to their original wild condition—unless, that is, extraordinary means were adopted to prevent this, and this would far out-balance the economy. But leaving this out of the question, there is no economy in saving ordinary garden seeds as they would be produced in ordinary course: seeds must be watched, and gathered, and dried, and cleaned, and stored by. All this takes time; and the time thus occupied is, in almost every case, more valuable than the seed which is obtained, even supposing it to be genuine, which, in nine cases out of ten, it would not be: so that, in fact, a high price would be paid for a very inferior article. Now, seed of an inferior quality and character could not produce good crops, and thus the loss would not rest with the seed itself, but would be prospective, affecting the value of the future crops raised from it. This is on the presumption that there is no spare time in which the seeds might be attended to; and in ninety-nine of every hundred gardens there is no such spare time. The labour allowed is generally under rather than over the necessary amount; and if any part of this is thus occupied, it is evident that something must be neglected. Within the limits of a single garden, too, many kinds would become intermixed or hybridised, and rendered altogether spurious. As a general rule, therefore, it is not an economical plan for a gardener to save for himself the seeds he requires. There are, however, two or three exceptions. Sometimes gardeners succeed in obtaining a "good strain," as florists would say, of some precarious kind of crop—brocoli, for example: in such a case, it is commendable to endeavour to perpetuate it if possible. Sometimes, either designedly or accidentally, they may produce an altogether new kind; and in this case, too, it is, undoubtedly, proper to secure seeds for its perpetuation and distribution. Some flower seeds, too, might be saved in most gardens, confining the selection to such as are rare, and are in their wild unchanged form. Such plants as stocks, for example, which are in a highly artificial state, could not, generally, be saved with advantage. In fact, these flowers, the best of which are imported from Germany, are there grown in pots, and seeded with great care, and outdoor seeds, even in that climate, are not at all prized. The principal general objection, therefore, to the growing and saving of garden seeds in private gardens is, that the article thus obtained is of very inferior quality. Again, it should never be attempted to save any two nearly allied crops at the same time, and this is especially the case with the whole cabbage tribe: not only should not two varieties of cabbage be preserved at the same time for seed-bearing, in the same garden, or even in neighbouring gardens, but only one of the whole family, including cabbages, brocoli, cauliflower, turnips, &c. The same may be said of varieties of lettuce, and other similar crops, of which there are numerous varieties. Something may be done to prevent their mixing, by having them so as to come into *flower* at different periods.

THE KITCHEN GARDEN.

Sow peas and beans in sheltered, dry, and warm situations.

Plant and transplant cabbages, cauliflowers, lettuces, potatoes, and shallots.

General Directions.—Drain, dig, dung, trench, and ridge the ground as required. Such crops as brocoli, and anything likely to suffer from the severity of the weather, must be sheltered. Finish taking up the various roots, and have them properly stored.

Artichokes (Globe). — Mulch close about them with long litter from the stable, and dig in a good portion of decomposed manure.

Artichokes (Jerusalem) should be carefully taken up, and laid on a cool floor, as potatoes; they must be clean gathered up, else they become troublesome as weeds.

Asparagus.—Top dress the beds with rich manure, of which good hotbed dung is perhaps the best form.

Beans.—Plant a crop of the Mazagan during the second week; draw the drills shallow, and leave the soil after covering them in a ridge form.

Beet.—Dig up carefully, that is, do not bruise the roots at any part so as to occasion bleeding; shake the soil off the roots, but do not use the knife much; it is better to wrench off the tops.

Brocoli.—Secure the early sorts from frost; the heads keep well when cut low and placed in a cellar or cool close shed.

Cabbage.—A few of the best plants may be planted out in a good situation, not otherwise; they are sometimes much hurt by frost.

Carrots.—If the weather is mild, thin out, and hoe the autumn sowing. See to the storing away of those dug up. Have the ground for the spring sowing well manured and trenched; the dung must be decomposed, and the soil deep and fine.

Endive.—It is well to lift all the roots that are likely to be of use soon, and put them in frames, or cover them with dry soil in a shed or cellar; but it must be done when they are free from wet.

Cauliflowers.—In mild seasons, the late plantings will still be in use; cut all that are nearly ready, and bring them in under glass; those ready for use may be kept for any moderate length of time, if cut very low, and packed either amongst charcoal, or, if in a dark place, without it.

Parsnips.—Lose no time in taking up the roots, as they are apt to be injured by remaining in the soil; the autumn sowing should be partially thinned, and well hoed when dry.

Parsley has proved serviceable in severe weather when kept in frames; and provision should be made for that purpose if required.

Peas.—Sow such as the Racehorse or Early frame in a warm border, or by the side of the south wall.

Potatoes.—Plant as early as possible, and of the earliest sorts; do not add dung about the sets; plant six inches deep.

Salsify and Scorzonera.—Get up the roots, and have them cleaned and stored in dry sand immediately, if not already done.

Seakale.—Give a thorough cleaning, and have it all slightly covered with leaves or strawy litter.

Shallots.—Plant on the first dry day; but if the soil is wet defer it until spring.

Spinach must be carefully gathered, that is, pick the under full-grown leaves, and not the upper ones, from the plants. A slight hoeing when dry operates beneficially; and when wanted regularly for use, it is often advantageous to have foresight enough to pick it the night before severe frosts.

Turnips should all be secured from the wet: they keep well out of doors, covered with straw; but it is preferable to have them in a corner of the potato-house, where a little litter may be cast over them.

THE FRUIT GARDEN.

General Direct'ons.—Proceed in earnest with the pruning and nailing of wall trees, leaving nothing until spring that can be done now; defer only the apricots, peaches, nectarines, and figs. When the trees are very luxuriant, root pruning may be resorted to. This operation consists in opening a trench two feet from the stem, and cutting all the strong and tap roots; to do this well, get first an idea of the nature and extent of the roots, so as to form, when pruning, an equilibrium between the latter and the branches. New plantations of all sorts of trees may be proceeded with: drain well at bottom, and plant shallow. The fruit is, ere this, expected to be all secured.

Fruit Room.—Give air daily to this structure, and pick out all fruit which show decay, on its first appearance. It will be necessary to keep turning them where they are thick. Put the good-keeping sorts on the upper shelves, and have all distinctly named.

Apricots may be planted in a soil of good turfy loam, eighteen inches deep; defer pruning both old and young trees until spring, but the luxuriant green shoots may be taken away at once.

Apples.—Young and old trees in every style of training may now be pruned and tied or nailed: cut the wood shoots close in, and thin out the fruit spurs. Keep standards open in the heart, and dwarf. Plant young trees in a loamy soil.

Cherries.—Finish the pruning and nailing of the early sorts; such as the Morello may be deferred. See that in nailing none of the shoots are allowed to press against the nail, but rather make them rest in the shred, otherwise they are liable to canker.

Currants of all sorts may be pruned and dressed; new plantations may be made, and stores of cuttings put in. Do not shorten the black currant shoots, merely thin them; in all cases give the bushes a symmetrical form and young appearance.

Figs must be protected in exposed situations, with such materials as fern or spruce boughs; remove all the green fruit that are larger than marbles, as they are sure to fall off in spring.

Filberts.—Prune similarly to currant bushes: remove all the suckers that spring from the root; shorten the spurs when they exceed six inches in length; allow a strong shoot to remain to fill up where there is a vacancy. Make new plantations, and plant at eight or ten feet apart.

Gooseberries.—In pruning the old bushes, do not shorten the leaders; but this is important in young plants to induce them to make wood: slip off (not cut) those intended for cuttings, and take out all the eyes or buds, except three at the top.

Nectarines and Peaches.—Divest these early of all green leaves and unripened shoots, but defer pruning until spring. Plant and mulch young trees, but the cutting of these also must be deferred.

Pears.—Prune, nail, and plant. Strict attention must be paid to the sorts in pruning, as some bear best on the young wood; keep the spurs short and thin; do not stop the leading shoots on the wall, except in the case of young trees: most of the pears like horizontal training. In planting trees, select or make the soil into a loam of medium texture, eighteen inches deep, and well drained. Newly planted standards it will be necessary to stake.

Plums.—Nail or tie in a good deal of the young wood, and shorten the spurs; tar twine is better than anything for tying in the old branches.

Raspberries.—Thin the canes to four or five, and cut the others close to the ground: tie them up to strong stakes, from four to five feet long, and manure and dig between the rows. Make new plantations, keeping them four feet apart in the row, and from six to eight between; choose a shady place, and a deep rich soil.

Vines.—Prune and nail in early: cut out all the weak and unripened rods, and shorten most of those left to three or four eyes; this is better than spurring for walls.

THE FORCING GARDEN.

General Directions.—Continue to clean out the houses, and prepare for early forcing: lay up stores of leaves and strawy litter for fermenting material. Begin to force plants always with a low temperature, and gradually raise it, thus following nature, who is steady in her course. Decrease the heat in pineries and stoves where cucumbers or such things are grown; also use less water. Protect and keep dry the various plants intended to be made available for forcing.

Asparagus.—Prepare a hot-bed, or take in some to the mushroom house, or any place where there is a heat of from 50 to 60 degrees.

Cucumbers.—Temperature 70 to 75 degrees by day, and from 60 to 65 degrees at night. Cut in those plants which may appear exhausted, which will again revive them. Fumigate often, and admit air every day; retain only a few fruit on the plants at one time.

Figs.—Temperature from 50 to 65 degrees. It is well to allow them a little rest; but those in pots may be kept or put to work in succession.

Kidney Beans.—Temperature from 50 to 65 degrees. If in the pine stove, syringe night and morning; give a little air daily, and all the light possible: sow for succession.

Melons.—Where there is a convenience for growing them in pots, make preparation by sowing at the end of the month; otherwise it is far better to defer it until January.

Mushrooms. — Temperature 55 degrees. Raise part of the heat by sweating and preparing in the house the dung for the successional beds; when fire heat is used, water the pipes or flues often. The heat in spent beds may be assisted by lying a little litter over the surface; when the beds require water, use it in a tepid state.

Musas.—Temperature from 60 to 70 degrees. Decrease the moisture, and make it winter with them.

Mustard and Cress will do anywhere in boxes, thinly covered, with a heat of 60 degrees; keep them near the glass.

Oranges.—Temperature from 40 to 55 degrees. Sponge over the dusty foliage; avoid syringing, unless very slightly, and when the sun shines.

Peaches.—Those in pots may be started by being placed in a heat of 45 degrees for two weeks: give the early houses plenty of air, and have them in perfect order, that is, the trees pruned and tied, and the border forked, cleaned, and watered, by the end of the month.

Pine Apples.—Temperature from 60 to 70 degrees; the succession plants 5 degrees less. Have the linings to the frames and pits renewed with fresh leaves and litter, or tan; give air daily, and meet the defect of heat by adding a little fire; water very sparingly.

Rhubarb.—Temperature from 50 to 60 degrees. The mushroom-house is an excellent place for bringing on rhubarb; lift and plant a few of the best roots, and water them with tepid water. The same with sea-kale: but both may be forced in the ground by putting over the crowns, boxes or pots, and covering the whole with litter and leaves; a strong heat at first must be avoided, and test-stakes must be used in the dung, so as to guard against its becoming more than milk-warm; this is known by pulling out the stakes and feeling them. To be ready at Christmas, begin early this month.

Strawberries.—A few of the best ripened plants may now be put in a heat ranging from 45 to 50 degrees, and kept near this for two weeks, then slightly increased: the front of the pine-stove will ultimately suit them. Those advancing should be syringed twice a-day, and aired daily, and have all the light possible.

Vineries.—Do not start any of the houses until the end of the month at the soonest, and then slowly. Those in pots may be started now in dung heat, say at 50 degrees, for a fortnight; syringe freely: have arrangements perfect, however, for increasing the heat either where they are, or elsewhere.

FLOWER GARDEN AND SHRUBBERY.

Plant and Transplant shrubs, bulbous roots, and various hardy biennials and perennials, if the weather is dry and open.

General Directions.—Persevere with transplanting, pruning, and protecting; also the making of alterations. Drain and trench where possible, if the ground is to be planted upon in spring. The laying of turf, box, and other edgings, manuring, sweeping, rolling, and gravelling, will also be among the principal operations.

Alpines and Auriculas.—Give plenty of air, and little water; stir the surface of the soil, and remove all dead leaves.

Antirrhinums, Aquilegias, and Anemones, should be planted without delay.

Calceolarias and Campanulas should have plenty of air, and be well protected, particularly the calceolarias; remove all appearances of damp, and water sparingly.

Chrysanthemums.—Cut over when past bloom: take up portions of the choice varieties to increase them, and to secure them from frost. In ordinary weather, those planted out, will stand without protection: keep all those in pots cool.

Clematis and other deciduous climbers may be pruned and nailed, or tied in, taking the hardiest first, and deferring the more tender sorts until spring; meanwhile give them a slight protection with spruce boughs or the dried fronds of fern.

Dahlias must be kept secure from frost and damp; they should be taken up on a dry day, and well dried in the shade; the roots keep best when buried *upside down* in sand; allow those in cutting pots to remain in the soil, and keep them perfectly dry.

Fuchsias.—Those kept dwarf may be cut down, and litter put around them; but the standards—by far the most valuable—should be cut close in to one stem, and this closely wrapt round with hay-bands: the root also must be well covered; mats or fern fronds are available for those on walls.

Jasmines and Honeysuckles.—The common sorts are hardy, and may be well thinned and tied in; but the tender sorts must be slightly protected.

Laurustinus, Arbutus, Sweet Bay, and other evergreens, are benefited much by slight protection in exposed situations; and especially if covered around the stem at the roots, with hay or strawy litter.

Liliums are amongst the grandest of our flowering bulbs, and are mostly hardy; they should be planted largely, and are admirably adapted, either for skirting the edges of lawn clumps and the shrubbery, for planting singly in the promiscuous borders, or in masses in the flower garden: they luxuriate in a soil of turfy peat and loam with a good portion of sand; plant five or six inches deep.

Lobelias, if not taken up, should be seen to at once; they will keep in boxes or pots in any out-of-the-way place in the greenhouse where they will be much exposed to damp.

Pansies.—Strew dry litter over the beds in severe weather: give those in frames all the air and light possible; stir the soil and give little water.

Pinks, Carnations, and *Picotees,* may still be planted out if the weather is open and mild; but in ordinary cases, to keep them under glass and free of damp by airing plentifully and watering sparingly, is most commendable.

Roses.—Make arrangements for adding to the collection. Prepare a soil of good loam, rather heavy, and well manured, and drained; but defer planting much until spring, if not done immediately. In purchasing plants, select those which have been budded on clean and strong stems, and have fast hold of them; get a number of dwarfs and train them in a pyramidal form, which is at once natural and beautiful. Attend to the protecting of the tender varieties; and mulch the newly planted as well as the others with strawy cow-dung. Procure stocks of briars for budding on, and plant them in nursery rows four feet apart, and eighteen inches between. The Hybrid Perpetuals are generally the most valuable sorts.

Ranunculuses, Tulips, Fritillarias, &c. should all be planted as early as possible, except when successional bloom is wanted.

Salvias.—The half hardy sorts should be taken up and preserved in boxes below the greenhouse stage through the winter.

Verbenas, though they endure the winter in some places, scarcely repay the trouble, unless in dry and warm situations: it is presumed that a full stock is long since secured in frames, and have air and water administered according to their wants.

WINDOW GARDENING.

Guard carefully against cold frosty winds; never allow them to blow upon any of the plants which are kept within doors, but still give air at every favourable opportunity, as the prevention of damp and mouldiness depends mainly on this. Do not keep any but forced flowers in rooms where a fire is constantly maintained; and even those should be kept in the coolest part. Apply water with great caution, using no more than sufficient to keep the various plants in an equal and regular state of moisture. As a matter of neatness and cleanliness, pots are generally placed in pans or feeders, but water should never be allowed to remain in them, or the roots will inevitably become damaged.

Bulbs, such as hyacinths, crocus, &c. should be steadily encouraged; a few of the best rooted, whether in glasses or pots, being placed in a warmer situation as soon as they have made a tolerable quantity of roots. The others should be allowed to advance at their leisure; they will succeed one another in due time, and thus keep up a succession.

Begonias.—Give no water, but keep them cool to prevent their shrivelling, and also to keep them from shooting too soon.

Camellias.—Place some of the most forward in a warmer situation, and water rather more freely; keep the leaves clean by sponging them occasionally.

Cinerarias.—Reduce the water as the weather becomes cold and wet, to prevent them from damping; keep them near the light, and give all the air possible, to prevent their drawing.

Fuchsias.—Keep them cool, and apply no water unless the balls of earth become too dry, and then be careful that any surplus drains clearly away.

Geraniums.—Apply little or no water even to those in a growing condition, and none at all to those put by to rest, unless they are absolutely shrivelling. Give air freely whenever practicable, and remove all decaying leaves or shoots as soon as they become unsightly.

Myrtles and similar evergreens should be carefully watered, and should also have the leaves occasionally sponged, or the pot should be laid down on the side and the plant well syringed to make it free from dust; give air freely on all favourable occasions.

Roses.—The soft wooded or Chinese sorts should be sparingly watered in gloomy weather, as they are very liable to damp; keep them in a warm airy place.

Primulas.—Apply water with great caution, but do not keep the plants in too arid a situation: shift any intended for late flowering, if the plants require it.

Violets.—Keep the plants free from damp and decaying leaves, and use little or no water in dull weather. A few may be placed in a warm airy situation to try for a few early blooms; the tree variety is the best for this purpose.

Wardian Cases.—Where any of the succulent species of plants are placed in these structures, great care should be taken to guard against damp, by giving air occasionally, and by wiping the inside of the glass. No additional moisture should be applied unless in extreme cases, and the plants should be kept as near the light as possible. Ferns and similar plants require a much damper atmosphere, but even in their case water should be sparingly used during the winter. Remove all decaying leaves, and give air at intervals if they appear to damp too fast. Except those filled with hardy ferns and mosses, the cases should be kept in the warmest rooms.

PITS AND FRAMES.

The principal operations will consist in covering up and uncovering; increasing the quantity of protecting material employed, according to the weather; in airing when practicable; and in guarding against damp.

Annuals.—Water very sparingly, but give all the ventilation that the weather will permit. Remove dead or decaying leaves or plants, and guard against any stagnation of water or soddened earth remaining in the pits or frames.

Half-hardy Plants, as calceolarias, petunias, verbenas, &c. require water only when the plants are thoroughly dry, and not in such quantity then as to flood the floor. Give all the air possible, but close the sashes early in the afternoon, and cover up soon when the nights are likely to be frosty.

Forcing Pit.—Maintain a temperature fluctuating a little above or below 55 degrees, as the weather permits. Give air when practicable, in conjunction with the above conditions, and regulate the supply of moisture accordingly, using little in dull weather. Introduce a fresh supply of roses, lilacs, and other shrubs, and especially of Dutch bulbs of all sorts, more particularly hyacinths and narcissus. Look carefully after insects, and fumigate immediately the green fly appears. Watch the expanding buds of the roses also, and pick out the destructive grub which feeds on the young leaves and flower buds.

THE GREENHOUSE.

Temperature.—From 45 to 55 degrees by day; and about 40 degrees by night.

Ventilation.—Give air on all favourable opportunities, observing to close early in the afternoon, and to admit little or none on the windward side of the house in rough although fine weather. Apply no fire heat except when compelled by frost.

Watering.—Apply as little as possible, and that only in the morning when the house is warm, using the water of the same temperature or a few degrees above that of the house. The syringe should be laid aside, and all slopping avoided as much as possible.

Potting.—Very little is requisite in this way now, except to keep the surface of the mould in the pots from becoming soddened or covered with moss. Where this is the case, the drainage should be examined, and the surface stirred and partially renewed; but be careful that the new coating does not lead to errors in watering, from the top appearing moist, and the old soil remaining dry underneath.

Soils.—Always maintain a thorough supply of composts, and at this season have enough under cover to meet the demand necessary; but do not allow any soils so placed under cover to become too dry.

Dressing.—The necessity for uniform neatness has been so often insisted upon, and is so indispensable, that it hardly allows of repetition; but the removal of all shabby or decaying leaves, or badly ripened shoots, now requires particular attention.

Insects.—The majority of insects are now in a comparative state of torpidity, but slugs and snails should be carefully watched, as the warmth of the house keeps them in activity nearly all the winter.

Aloes, and succulents generally, must still be maintained in a state of rest, by giving little or no water, and keeping them in the lightest and airiest part of the house.

Agaves and larger succulents may now be left without water, but should receive all the air possible.

Alströmerias.—Keep these still in a state of rest by maintaining a condition as regards moisture in which the tubers will neither suffer by damping nor shrivelling.

Annuals.—Such as are kept in the house should be placed near the light, and have all the air they can; and should be very carefully watered, in order to keep them as dwarf and stocky as possible.

Azaleas.—Place such as are advancing, in a warmer place, in order to maintain a proper succession. Water regularly and thoroughly when necessary, in order to keep a fine foliage.

Calceolarias.—Maintain a regularly moist, cool, and airy temperature about the plants, and pot off or shift such as may require it.

Camellias.—Keep the plants cool and airy; water regularly, just keeping the roots in a moderately moist condition. Move a few of the most advanced into the forcing-house, but let the increase of heat to the plants be very slight and gradual.

Cape Bulbs, as ixias, gladiolus, &c. should be maintained in a state of perfect rest. Newly imported bulbs, if arriving at this time of the year in good condition, should also be kept over till the spring.

Cephalotus follicularis (New Holland pitcher-plant).—Former directions should be referred to, and a rather warmer and more airy exposure given it to guard against damp.

Cinerarias.—Such as are very forward may be assisted by a little heat; shift such as require it; water regularly, and rather copiously.

Chrysanthemums.—Water those in flower regularly and freely, according to the state of the weather; remove such as are past flowering to a frame, or the best shelter available, plunging the pots if exposed out of doors.

Crassulas, and allied plants, as sempervivum, should be kept warm and dry, and well exposed to air and light.

Cyclamens.—Any that are pushing should be steadily encouraged, but not forced too fast; they are better dormant until the turn of the season.

Epacris.—Free ventilation, a regular moisture at the roots, and a rather low temperature, will answer best with these plants at present.

Ericas.—The greatest amount of air possible must be given, with a moderate amount of moisture at the roots. Great care must also be taken against mildew in damp, foggy weather; against this a free and dry atmosphere is the best guard. Remove any plants affected to another house as soon as the attack is noticed, and dress them with sulphur.

Fuchsias.—Still keep these in a state of rest; or any that are in an active state should be kept in the coolest and airiest part of the house, and get very little water.

Gompholobiums, and slender creepers, should be still kept in a warm but airy place, and water supplied with great caution, but they must never be allowed to get dry.

Haworthias, Apicras, &c.—Give water only sufficient to prevent them from decreasing in bulk, and keep them in a warm part of the house.

Helichrysums should be watered sparingly, and be kept in a dry and airy part of the house.

Leschenaultias. — Maintain a dry airy temperature, and use water with great caution, although the roots must never be allowed to become dry.

Lilium japonicum (Japan lily). — Keep the roots cool and dry, so as to run no risk of starting them into premature growth.

Mignonette.—The tree-like plants should now be in full perfection;—water regularly, but rather sparingly; and remove the flower-spikes before too many of the seed-vessels swell so large as to rob the plants of nourishment, which checks their blooming.

New Holland plants, as acacias, hoveas, bossiæas, &c. require watering regularly, but must not receive too much either of moisture or heat, so as to encourage a premature growth.

Orange trees.—Maintain these in a light and airy situation if possible, and apply only sufficient moisture to keep the roots in a healthy condition.

Oxalis.—Keep all the bulbous species perfectly dry, and apply very little water to the succulent stemmed sorts.

Pelargoniums. — Keep the plants rather warm, but still allow a free circulation of air, or they will suffer. Stop and tie out the branches as they advance. Remove a few of the earlier sorts to the coolest part of the forcing-house, in order to keep up the succession with those similarly treated last month. Of course any intended for such use, or to come in before the main bloom, should not be stopped now.

Primulas.—Pot off the seedlings, and continue to shift the more advanced plants as occasion requires. Keep the plants rather moist, but also airy, so that no stagnation of water may take place near them. Continue to pick out the flowers of such as are wanted to bloom late in the spring.

Proteas, Banksias, Dryandras, &c.—Adhere to the treatment previously given, guarding cautiously against damp.

Rhododendrons. — Keep them in a cool, airy situation, and water regularly but cautiously, giving no more than sufficient to keep the roots in a medium moist state; a few of the commoner sorts may be moved to the cool end of the forcing-house, but none of any value should be thus treated at this season.

Roses.—Those turned out against pillars or trellises should be kept rather dry, if the weather prove cold and cloudy. The more tender sorts should also be kept rather dry, and in a warm but airy place, in order to guard against damp.

Salvias.—Reduce the supply of water to the plants as they cease blooming, and gradually lessen it until they receive no more than will just keep them from withering ; keep the tender sorts in a rather warm situation.

Stapelias.—Continue the previous treatment, giving no water in dull or damp weather, and guarding against any of the pots retaining water longer than the others.

Tropæolums.—Pot any that may start, but keep all others dry for the present. Train out regularly those advancing in growth, placing the plants in the full-sized pot, and fixing them to the trellis on which they are to bloom. Water carefully, but never suffer those in a growing state to become dry.

THE CONSERVATORY.

Temperature, from 55 to 60 degrees by day, and from 45 to 50 degrees by night. Use fires occasionally in the daytime in dull weather, to keep the house free from damp.

Ventilation.—Give all the air consistent with the above temperature in fine weather ; close the house early.

Watering.—Moisture should be applied very sparingly, even to plants in bloom, and it should always be used at, or rather above, the temperature of the house. Avoid syringing or damping the house unnecessarily by slopping water about.

Arrangement.—Continue to alter the arrangement of the flowering plants as much as possible. Good effects may be produced by attending to the grouping of the various forced flowers as they are brought in. Masses of these, either separately or in combination with the other plants, may be so arranged as to give quite a fresh character to the house, especially as they become more numerous.

General Directions.—Strictly attend to the neat keeping of the house and plants, especially in removing the decaying leaves from those which are more liable to lose them now. Do this by pinching or cutting off the leaf, and not by twisting or tearing the leaf-stalk down the shoot, by which practice the bark is frequently lacerated, and the plant materially damaged. Cut off all flowers as soon as they are past their prime, as they are sure to damp and perhaps rot the shoots and foliage near them if not removed early.

THE PLANT STOVE.

Temperature, from 60 to 65 degrees by day, and 50 to 55 degrees by night.

Ventilation.—Carefully regulate the admission of air by the external temperature ; and also with regard to the heat necessary to be maintained. Fires will be necessary as soon as the weather becomes cold and damp, but they should be applied very gradually, in order to avoid exciting the plants too soon.

Watering.—Use water with great caution, giving little or none to such bulbs, succulents, and other plants as are in a state of rest, and supplying those in a more active state with less, as the weather becomes dull and cold.

Potting.—Pot such as may require it, especially bulbs or tubers just starting, using the smallest pots possible, in order to avoid damp.

Insects.—Attend to former directions, allowing no rest to any depredators. Look close after wood lice, which often secrete themselves about young and tender roots.

Achimenes.—Shift such as are growing, and pot more as a succession, placing them in a mild bottom heat, and watering sparingly until they are advancing rapidly. Use a light compost of peat, leaf mould, and sand, draining the pots thoroughly.

Allamanda, Beaumontia, Echites, and all strong growing climbers, should be kept in a state of rest, being supplied with very little water, and kept in a warm part of the house.

Alpinias, Hedychiums, and other reedy plants, should receive the same treatment as last month, giving little or no water as the foliage dies down.

Amaryllids.—Pot such as throw up their flower stems, and advance them slowly. Keep all that will keep down, out until the spring.

Aphelandras, Justicias, Ruellias, &c.—Withhold water as the plants show symptoms of rest, and place them in a cool situation. Such as are now flowering or advancing should be more liberally watered and kept in a warmer position.

Begonias.—Steadily advance such as are growing, but keep the others dormant, by placing them in a cool dry situation.

Burchellia.—Keep cool and dry; small well-ripened plants may be excited by extra heat and moisture to flower early.

Cacti.—Keep up a succession by placing a few more in heat, and gradually increase the supply of water; the others should still be kept cool, and have no more moisture than just enough to keep them alive, and not too plump.

Cinnamomum (Cinnamon tree).—Use water with great caution, and keep the plants in the warmest part of the house.

Clerodendrons.—Cut in and remove to a cooler house as they go out of flower. These plants are very subject to the mealy bug—now is the time to clear any that are infested.

Climbers.—Those that flower early should now be pruned, thinned, and tied up; clear them from insects, old ties, and all unsightly leaves and scraggy branches.

Daturas should be well rested by withholding water, as on the wood being well ripened depends the next season's growth and flowering.

Erythrinas.—Keep them cool and dry, and cut down the old stems as they decay.

Euphorbias.—Keep the succulent species dry. *E. jacquiniflora* will now be in bloom or coming on; it should therefore be treated more liberally, and well exposed to the light.

Ferns.—Continue to guard against excess of damp, especially to those whose fronds die down. Allow a freer circulation of air among the plants generally.

Gardenias.—Place more in bottom heat for early flowering, keeping a moist regular atmosphere about the plants, as well as at the roots.

Gesneras, Gloxinias, &c.—Those at rest must still be kept so in a cool, airy place, and such as are growing and flowering should receive sufficient heat and moisture to maintain them in a vigorous state.

Hippeastrums, Crinums, Pancratiums, &c. —Keep these plants as much at rest as possible, but so that they do not lose their leaves.

Ipomœas.—Keep cool, so as to prevent their making long straggling shoots; the tuberous species should be entirely at rest.

Ixoras.—Keep them rather cool and airy, giving very little water, so as to rest them perfectly: clear them now of insects.

Jasminums, Rondeletias, Brunfelsias.—A few of each, that have been thoroughly rested, may be placed in heat for the sake of early flowers; keep the others comparatively dry and cool.

Lantanas.—Keep at rest; if any are growing, top them into the desired form and size.

Luculia gratissima.—A cool airy situation, with a small supply of water, will do for this plant now.

Lycopodiums.—Keep damp, but not to the extent previously required.

Malvaceous Plants, as hibiscus, must be brought to a decided rest, if not already done. Clear away the leaves and half-ripened shoots as they decay.

Manettias, and other tender climbers, should be kept cool, so as to become rested, and cut them in as they require it; they should also be carefully freed from insects while in a comparatively dormant state.

Melastomas.—Attend to previous hints, and keep the plants as quiet as possible during the gloomy winter months.

Melo-Cacti should be kept dry and dormant; a mild regular temperature suits them best at this period.

Musas should be kept as dormant as possible, but in a warm situation, as cold or damp speedily injures them.

Nepenthes (Pitcher-plant).—Keep it warm, and comparatively dry, guarding carefully against stagnant water about the roots.

Neriums.—Keep them cool, and rather dry; where the stock is numerous a few may be sent to the forcing house.

Nymphæas (Water lilies).—Attend to previous directions, keeping the roots rather dry.

Palms require a steady, rather dry atmosphere; keep the foliage clean, and water sufficiently to prevent them from flagging—no more.

Thunbergias.—Keep the perennial sorts at rest as near as possible, and cut back such as require it.

Vincas.—Cut back such as are at rest; keep them so, by removing them to a cooler house.

THE ORCHID HOUSE.

Temperature.—The warm house for the Indian species 65 to 70 degrees by day, 60 degrees by night; the cool, or Mexican house, 60 degrees by day, and 55 degrees by night. Let the range be rather lower in cold bright weather.

Ventilation.—Little or no air must be given except in very favourable weather, when a little may be admitted among the plants at rest, especially in the cool house. Close the house very early in the afternoon, and see that the fires are sufficient to maintain the requisite heat.

Watering.—Use water with the greatest caution, especially in dull weather. The syringe should not be used to the plants except slightly in very favourable weather.

Insects.—Maintain a constant watch for the ravages of all vermin, especially for small snails and slugs, which are nearly always in a state of activity, owing to the temperature of the house.

Potting.—Shift such as require it before they are too far advanced in growth, being careful not to put too much mould or moss over or among the young roots.

Shading may be entirely dispensed with.

Soils.—Attend to previous directions, and continue to collect as opportunity occurs.

Imported Plants, if recently received, should be kept cool, so as not to commence their growth until a more favourable season. Such as are progressing should be removed to a slight increase of heat.

Aërides, Saccolabiums, and Vandas, as they complete their growth should be allowed to rest, receiving no more water than just sufficient to prevent the leaves from being injured.

Cymbidiums.—Allow these to rest in a similar way to the above, but giving a greater quantity of water when necessary.

Cattleyas, as they complete their growth, should be removed to the coolest part of the cool house, and receive little or no water.

Dendrobiums should be removed to a cool airy part of the house, in order to harden their shoots; water very little.

Oncidiums.—Place them in an airy situation as they complete their growth, and water very sparingly at the mere roots.

Stanhopeas.—Apply water very cautiously, as the thick fleshy roots are very impatient of moisture at this season of the year.

FRUIT TREES AND THEIR CULTURE.

Although this subject might be divided into twenty different papers for the purpose of giving the details of management necessary to so many different subjects as there are fruits, there are certain general principles which bear upon all, and which we seem now more disposed to treat of than minor points, because they affect all more or less, and may be taken as a foundation for general fruit culture. We start with a theory that may not be acceptable to the German dogma of Morphology, which, as explained by modern writers in its behalf, implies nothing more nor less than that flowers are metamorphosed leaves, and fruit stunted branches, because we deny that any one organ alters into another organ, and affirm, that plants are naturally as perfect as animals, and that a leaf no more alters to a flower, nor a branch to a fruit, than an arm alters to a leg, or a finger to a thumb. It is not our purpose to refute the nonsense which enforces these dogmas by an appeal to those specimens which exhibit one organ in the place usually occupied by another. It is sufficient for our purpose to appeal also to animal specimens, where a leg is seen in the place of an arm, and various other monstrosities in which the ordinary purposes of nature seem prevented. Our theory, founded on unerring fact, is, that in any atom of a plant, there are the germs of leaves, branches, flowers, and fruit; that suffered to grow in its usual way, all these take their places with the regularity and precision of all organized subjects; that while the plant is young and vigorous, and the sap in the peculiar state which the proportion the root bears to the tree requires, the germs of leaves and branches are alone excited, and those of fruit and flowers are quiescent; and that when the tree attains maturity, the sap changes its character, the germs of flowers and fruit are excited, and come as a matter of course; the plant is perfected by the production of the fruit, and the seeds in due time. The change in the sap as the tree attains its maturity arises out of the difference of supply, that being in proportion to the size of the tree, and the capacity of the root, and the effect of the sun and air being to thicken or elaborate the lessened quantity. From this we maintain, that giving exciting matter to increase the capacity of the root, or cutting the tree smaller to diminish its wants, will again induce the growth of leaves and branches, and that cutting away the roots when a tree was in full vigour, would so diminish the supply of sap as to produce the necessary change at an earlier period, and induce the production of flowers and fruit. We establish all these things on unquestionable proof, and upon that ground our management of fruit trees. There are various modes, however, of reducing the supply of sap: some have effected it by what is termed ringing the bark, that is, cutting away the bark all round the stem, or of a single branch, a certain width, from half an inch wide on small branches to two inches wide on a trunk: this has been known to have the effect on the part beyond or above the ring. But to produce any effect upon the whole tree, there is nothing so good as pruning the root itself; and if it is desirable to fruit the tree very young, occasional removals are desirable. In some cases the effect is produced by grafting on a stock which naturally gives less sap than the sort grafted on it would take up. In reading books of old practice, and considering the various means by which fruit is produced, every expedient is founded on the same design,—that of lessening the supply of sap. We see nothing to recommend in any of them. Some bend the branches so suddenly as to cause an interruption to the circulation of the sap, and, thereby, lessen the quantity beyond the bend. All these things, however, merely confirm our notion, that the whole art of making trees bear out of their natural course, consists in imitating the conditions of maturity as closely as possible. Proofs are at hand for any body who will take the trouble. Take a young tree of any kind,—a dwarf cherry, or pear or apple tree, and plant it in a pot; as soon as the roots fill the pot, and the supply of nourishment is thereby lessened, it will begin to bloom and bear fruit; by these means, trees not two feet high, in pots of a foot across, are obtained loaded with blossom, and bearing as much fruit as the capacity of the root will supply nourishment for; and if there be more than ought to be ripened on so small a tree, they should be thinned, otherwise a number will fall for lack of support, and those which remain on the tree will be smaller than the natural size. But suppose, instead of a pot being used at all, the root be sufficiently pruned, and it be planted in the open ground, it will bear as early; and as the root will, if long in the ground, grow rapidly, and soon excite growth instead of fruit, the tree must be pruned again at the root, and replenished to keep it bearing. After which second pruning, it may continue to bear, because the head having grown sufficiently beyond the root to keep its advantage, the root will not be able to surpass in growth and capacity the power of the tree itself. In general, there is too little consideration in planting trees. The nature of the soil, the situation, the natural means of supplying nutriment, and other circumstances, should always be considered, yet they are for the most part neglected by those who furnish their own gardens. In cases where people wish to do more than their neighbours, they will dig holes for fruit trees, and fill up with rich composts, causing the trees to grow vigorously so long as any of the artificial nutriment remains; and during all that period, the germs of leaves and branches are alone excited, and the complaint is, that they will not bear fruit. When, in the course of years this soil has given out the superfluity of nourishment, and the supply is lessened, the trees begin to bear, and that profusely.

Those who have had much to do with fruit trees against houses, will have observed that some will go all to wood for years, and scarcely bear a flower or fruit. This has often perplexed the owners, and we have repeatedly known them to be cut down in despair of their ever bearing, when perhaps another two or three years would so far mature them as to make amends for the past by heavy crops. In such a case as this, we should dig down to the roots, and examine them; if there were any tap root, we should begin our experiment by cutting it off, that is, by cutting right through it without wanting to remove it, nor should we cut it too close up to the tree, because it is not unlikely that it may be the chief support of the plant. This, however, would be the result of carelessness in planting, because all downright or tap roots ought to have been cut off at the planting time. If, on the contrary, we found spreading roots running out very strong, we should remove the ground to some distance, and cut the strongest through, so as to shorten it considerably; and if this happened to be the chief one, it might be a sufficient check. The result of this must be to throw the tree into bearing, or kill it, but by taking pains to expose the principal roots, we may easily see their extent, and by shortening two or three of the most rambling, we may do all that is desired. It is quite certain that when the sap is in quantity, and quality, (which depends on quantity,) fit for the excitement of the germ of flowers and fruit, it is less exciting to those of leaves and branches, and any sudden change which fits it for one, unfits it for the other. Thus, suppose two trees were full of blossom buds, the effect of well elaborated sap of the previous summer, remove some of the soil to form a trench three or four feet from the stem, or more distant if a large tree, and fill that up with strong liquid manure, so that it shall reach the fibres of the roots to the end of them all round, and it will so alter the supply of sap as to excite the germs of leaves and branches, instead of letting the bloom and fruit take their natural course; they are blighted in embryo, leaves and branches alone grow, the others fall away in dust almost imperceptible, the sheath that enclosed them as well as the previously latent germs of flowers and fruit opens to disclose a new branch instead of the now blighted flowers. Now, in all cases of monstrous flowers and plants, the monstrosity has been occasioned by some rapid change of condition such as we have mentioned; that is to say, by some sudden excitement causing a struggle between the incipient organs for the mastery. If the blooming process is too forward to be actually destroyed, and is only partially blighted, there will frequently be seen half blossoms and bits of flowers. In the case of roses, the leafy process may be excited enough to push through the flower, and the bloom will be found actually surrounding a branch which has so protruded. In many other subjects similar deformities arise, not from the changing of one organ into another, but from the excitement of opposite organs which grow and displace others which do not. When it is considered that the germ of a whole tree is contained in a seed, the germ of branches in a bud,—that in fact microscopic powers of the highest degree simply show us a crowd of atoms in a plant, there is nothing extraordinary in the fact that, through some organs being half blighted, and others being unnaturally excited, leaves displace flowers, force themselves out of character, and occasionally produce odd combinations; nay, in some instances, the germs fracture one another, and it is nothing very extraordinary to see portions of leaves fairly grafted to portions of petals; but in fruit trees, generally speaking, the growth of the buds which are denominated fruit buds, into flowers and fruit, is alike all over the tree, or, if excited by the means we have pointed out, before it is too far advanced, the growth of leaves, and the blight of the embryo flowers and fruit are as universal. It follows then, that when the trees once begin to bear, they continue to do so, unless blights destroy the blossom or the fruit after setting, in which case, there being no fruit to take up the nourishment which the tree has provided, the germs of leaves and branches are excited, and there is a much more rapid growth than there would have been had the fruit remained on. So also, it may be observed, that while excess of sap is provided for the rapid growth of branches, the trees will not begin to bear fruit, and this is sometimes manifested in a curious manner by twenty years of growth before a fruit is borne. The case we have cited, and the proposed cure, demonstrate this.

In planting fruit trees to form an orchard, some regard should be had to the soil, for it is better to sacrifice a little convenience in the plan of the orchard to secure good loamy soil, than to study convenience only, and entail the expense of making the ground, which must be looked upon as a temporary measure, securing present good but not permanent benefit. If the loam be pretty deep and tolerably good, plant without any addition whatever. If it be shallow, there must be holes made, and the soil that is good thrown on one side to be used again, while the hungry or sour stuff may be thrown out on the other side to be rejected altogether. These holes ought to be four feet across and two feet deep, and the good soil should be returned into them, and they may be filled up with the top spit or half spit taken from all round about the hole, and, if necessary, all over the ground, and the sour or hungry rejected soil should be spread abroad in its place. The holes being made at the distances intended for the trees, which may be close or wide apart according to the wish of the owner, should be in straight rows, say twenty to twenty-five feet apart in the row, and the rows from thirty to forty yards from each other. A tree should be planted in the middle of each, and they should be procured from the nurseries with all their roots about them undamaged. It is necessary to examine the roots, to cut off all the bruised ends, to shorten all vigorous shoots, and especially to remove any root that may be growing downwards, as it would naturally grow directly downwards, and become a tap root; cut such roots pretty close up to the bottom of the tree, remove also, or shorten, all straggling or vigorous shoots from the head, first to bring it into regular and proper shape, and, secondly, to lessen the quantity of growth to be sustained; cut out also all thin and weak shoots, for they are useless, and militate against a good wholesome growth. The trees thus prepared may be planted in the centre of each hole, always premising that the soil has been allowed to settle down properly. All planting should be shallow; the nearer the surface the roots grow the better, so that they are fairly covered, for they will grow downwards fast enough. If it be an object to throw the tree into bearing early without reference to the ultimate growth of the tree, the root may be pruned in pretty freely; but a moderate pruning is the best, such as shortening any of the strong portions which seem inclined to ramble, and always cutting off any portions inclined to form tap or carrot-looking roots. This is sufficient in general. When the tree is planted a hole should be opened larger than the root, but very shallow, and shallowest in the middle; in fact, the bottom ought to be rising in the middle. The roots then slope downwards all round, and the soil may be filled in, so as to go between all the roots and to cover them, when the earth should be trodden firmly down. In addition to the treading the plants in firmly, there should be three stakes driven into the ground two feet from the tree, and sloping so as to press the trunk; and where these three stakes press the trunk they should be tied firmly, placing, however, some hay or straw next the trunk, that the bark may not be damaged by pressure. These will effectually prevent the root from being disturbed by the wind, which would otherwise blow the trees about and perhaps destroy them altogether, for the small roots would be broken off and greatly damaged; even if they were placed right again on the ground, the slightest wind would again disturb them. These trees would make considerable growth the first season. It is desirable to watch this growth, and if any branch is growing more vigorously than the rest, and running away, as it were, from a proper growth, remove it altogether if it can be spared, or shorten it if it cannot be spared. If there is much growth of small twig-like shoots, remove some or all; the object is to let the head grow of a goodly form, spreading equally all round, and if any branches cross each other, or are too close, one should be removed to give room. Also, if the shoots grow inwards, and would crowd the head, let such be cut away, or rubbed off while young, for unless trees are open enough to let in sun and air the fruit will not come fine, and all this applies to every fruit tree. The trees will make vigorous growth, as the soil cannot fail to agree with them if it all consists of the top spit or half spit of even ordinary mould. Perhaps the most easy method of setting about an orchard, when you are obliged to use the surface to fill up holes and spread the bad stuff on the surface, is, to rob it a little all round each hole: say the hole is four feet across and two feet six inches deep, first throw back the top spit of the hole itself, and then dig the top spit off all round the hole a foot or two feet in width, or more, if necessary, throwing it inward till you have raised the stuff in the hole pretty nearly a foot higher than it was originally, to allow for settling, and then the rough bad stuff will be round the tree, but completely under the head, where very little would grow even if the soil were good. This prevents the rest of the soil from being disturbed, and for all the good the ground immediately under a tree does, there is nothing lost. In after growths of the trees the same caution should be observed in preventing branches from crossing each other, or from growing too vigorously and out of form. Few people take this pains with standard fruit trees, but it is as desirable and as necessary as the training and pruning of wall fruit trees; and they pay quite as well for the care it takes to look after them properly.

Trees will begin to bear sometimes in three years, but much depends on their state when they were planted. The stakes which are placed to prevent them from shifting when planted may be removed after the first season's growth, as the ties would be apt to injure the bark if kept on too long. The ground between the trees is best laid down in grass; it is any way best for an orchard, but of course, if it be wanted for cropping, two things are to be minded, one is that the ground is not disturbed round each tree, so far as the good ground and the bad ground beyond it reaches, for the soil would bring nothing perfect nor worth notice.

ANALYSIS OF VARIOUS MANURES.

Notwithstanding all that has been written and said of the various manures which are used in the dressing of land, and their effects upon crops, scarcely two chemists give the same analysis of any compound body, and this chiefly because they give the result in different states, some intelligible, some not, but all various. We can hardly illustrate this better than by quoting Dr. Ure's analysis of Guano, and Voelckel's. The former is as follows:—

DR. URE'S.

Azotized organic matter, including urate of ammonia, and capable of affording from 8 to 17 (a pretty large difference) per cent. of ammonia by slow decomposition in the soil	60
Water	11
Phosphate of lime	25
Ammonia, phosphate of magnesia, phosphate of ammonia and oxalate of ammonia, containing from 4 to 9 (another *trifling* difference) per cent. of ammonia	13
Siliceous matter from the crops of birds	1
	100

VOELCKEL'S.

Urate of ammonia	9·0
Oxalate of ammonia	10·6
Oxalate of lime	7·0
Phosphate of ammonia	6·0
Phosphate of magnesia and ammonia	2·6
Sulphate of potash	5·5
Sulphate of soda	3 8
Muriate of ammonia	4·2
Phosphate of lime	14·3
Clay and sand	4·7
Animal substances, with a small quantity of salts of iron and water	32·3
	100·0

We are not now going to allude to the discrepancy of the quantities, because that does not affect the question, but to the discrepancies of the terms and the nature of the results. Why are not the same tests applied and the same items mentioned? How can any farmer or person in any other class not versed in chemical affinities and the nature of them, imagine that these two results are of the same article? It is as if scientific men were determined that common people should never understand them. One of these chemists produces no less than eleven different items or materials; the other sums up the qualities of guano in five. Can this be right? that is to say, can it be right for the guidance of inexperience? One more illustration of this and we have done: take the subject of cow dung. Three analyses of this animal manure by three different chemists are thus given:—

The author of the *Muck Manual* says, the proportions of organic matter, water, and salts, in 100lbs. of cow dung, are—

Water	83·600
Organic matter—	
Hay	14·600
Bile and resinous biliary matter	1·275
Albumen	·175
Silica	·140
Sulphate of potash	·050
Geate of potash	·070
Muriate of soda	·080
Phosphate of lime	·230
Sulphate of lime	·120
Carbonate of lime	·120
	*99·860
	14
	100·00

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* This is wrong in the addition, because the sum should be 100·46, consequently there is 46 over instead of a loss of 14. However, this is not material, except that it shows carelessness somewhere, but does not affect our object, which is to show that hardly two chemists agree in their terms, to say nothing of proportions.

Morin's analysis consists of—

Water	70·00
Vegetable fibre	24·08
Green resin and fat acids	1·52
Undecomposed biliary matter	·60
Peculiar extractive matter	1·60
Albumen	·40
Biliary resin	1·80
	100·00

M. PERROT'S.

Water	69·58
Bitter matter	·74
Sweet substance	·93
Chrophyle	·28
Albumen	·63
Muriate of soda	·08
Sulphate of potash	·05
Sulphate of lime	·25
Carbonate of lime	·24
Phosphate of lime	·26
Carbonate of iron	·09
Woody fibre	26·39
Silica	·14
Loss	·14
	* 100·00

With these discrepancies before us, how can it be expected that we, the uninitiated in the mysteries of chemistry, can arrive at any conclusion as to the value of cow dung as a manure? The amount of water in cow dung is very large, and it is said to be the least valuable of animal manures, although used as a standard, much in the same way as copper coin might be used as a standard for the value of the better metals; but nothing could be more uncertain than cow dung, in consequence of its large quantity of water, because if exposed it would not be of the same value two days together. The water would evaporate, consequently dried cow dung having lost the greater part of its water would become a much more valuable manure. The author of the *Muck Manual* says, that without violence to chemistry the composition of cow dung may be stated as follows:—

Geine	15·45
Salts	·95
Water	83·60
	100·00

Proceeding in the same chemical expression and classification of contents, the following are the results of several other manures:—

HORSE DUNG.

Geine	27·00
Salts	·96
Water	71·20
	99·16

It is not so stated, but doubtless the deficiency in the hundred parts is loss; but the value of manure consists in its capacity to produce ammonia, of which we shall offer a notice presently. Night soil by analysis yields

Geine	23·5
Salts	1·2
Water	75·3
	100·0

We are informed then by Mr. Falkner, that the following are the ultimate results of the three manures:—100lb. cow dung will yield of carbonate of ammonia about 2lb. 2oz., horse dung 3lb. and nearly a quarter, and night soil 15lb. and nearly a third. The presence of nitrogen, which regulates the capacity of a manure to produce ammonia, determines the true value of the article, inasmuch as, by uniting with hydrogen, it produces pure ammonia. As a passing remark, we may observe that pig dung is supposed to be upon an equality with night soil; but it must always be recollected that a difference of food makes a difference in the relative qualities of the dung of all animals. The experiments undertaken by the Prussian authorities, to ascertain whether the contents of the sewers of Berlin and Dresden could be applied to fertilizing the adjacent land, seems to prove that if land unmanured produced three bushels for one sown, then —

Cow dung would produce	7
Horse dung	10
And night soil	14

But it is not in sewers, which are receptacles for every thing, that night soil could be had in its unmixed state, and consequently we may consider that as underrated in value.

Poudret, which is a preparation of night soil, good or bad according to the honesty of the manufacturer, is ranked with guano, but next to night soil. The value of poudret depends on whether the ammonia is lost or saved. "If night soil be mixed with sulphate or muriate of lime before drying, the volatile carbonate of ammonia will be changed into sulphate of ammonia and *sal ammoniac.* Thus not only the most valuable portion of night soil will be retained, but the salts of lime will be much increased. The mixture will be perfectly inoffensive, and allowing ground peat and plastic with the other salts to form one half of the dry mixture, there is then in every 100lbs. fertilizing proportions equal to

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* This is as it appears in print, but it is wrongly added, because the sum is 99·80. However, this affects not our objection to the strange want of uniformity in the terms of the various results.

200lbs. of the moist human excrement, and the value of good poudret is as compared with cow dung as 14 to 1. Another kind of poudret is prepared in France by boiling the offal of the slaughter-house by steam into a thick soup, and mixing the whole into a stiff paste with sifted coal ashes and drying it. But perhaps soot is the most powerful of all manures. Its analysis is as under :—

Geine	30·70
Nitrogen	20·00
Salts of lime, mostly chalk	25·31
Bone dust	1·50
Salts of potash and soda, and ammonia	6·14
Carbon	3·85
Water	12·50
	100·00

The salts, therefore, in 100lbs. of soot are equal to a ton of cow dung. But among the subjects of regret to all who give themselves the trouble of thinking about such matters, that of wasting the liquid evacuations of animals is perhaps the most remarkable. The salts therein contained are beyond measure valuable; yet how rarely are they appropriated! how common is it for this and the drainings of the dungyard to run to waste! Let us look a little to their composition and to their fertilizing qualities, and compare them with the analyses we have already quoted. We shall still keep to the authority of the *Muck Manual*, the most useful work that has emanated from the press on the subject.

That of the cow contains:—

Water	65
Urea	5
Bone dust	5
Sal ammoniac and muriate of potash	15
Sulphate of potash	6
Carbonate of potash and ammonia	4
	100

Compare this with the dung of the cow. It appears already that 100lbs. of dung afford 2lbs. 2oz. of carbonate of ammonia, while this gives 5lbs. of ammonia in its urea, and nearly three times 5lbs. in its other ammoniacal salts; in short, 100lbs. afford 35lbs. of the most powerful salts ever used by farmers.

The liquid evacuation of the horse contains:—

Water	94·0
Urea	·7
Chalk	1·1
Carbonate of soda	·9
Hippurate of soda	2·4
Muriate of potash	·9
	100·0

It is thus equal in value to cow-dung, pound for pound; but when we come to the subject of waste, the author of the *Muck Manual* tells us that every man wastes annually enough salts to manure an acre of ground. The liquid evacuations are equal in value to that of the cow: the analysis is not in all respects the same, but the value is. According to Dr. Thompson's analysis, the contents of 1,000lbs. are more than 42lbs. of salts, for there is not an ingredient that is not essential to plants. The analysis is as follows :—

Sal ammoniac	·459
Sulphate of potash	2·112
Muriate of potash	3·674
Common salt	5·060
Phosphate of soda	4·267
Bone dust, phosphate of lime	·209
Acetate of soda	2·770
Urate of ammonia	·298
Urea, with colouring matter	23·640
Water	967·511
	1,000·000

Wrong cast, because these make up 1,010 instead of 1,000; but we suspect that the contents are right in all the essentials, and that the error is in putting down the deficiency as water, which is probably in the original not stated other than in words—"rest water." It is not, therefore, of any consequence as regards the value as a fertilizing matter. 54 bushels of soot and 6lbs. of salt produced larger crops of both the Altringham and Belgian white carrots than 24 tons of stable manure and 24 bushels of bones, though at half the cost. We cannot help wishing that there were some uniformity in the mode of recording the contents of any thing analysed, that we might be better able by comparison to judge the value, and have more confidence in the gentlemen who undertake such tasks. It is greatly to be regretted that persons affording information cannot understand why one man should produce one set of combinations, and another chemist bring out another, when the two articles are the same; but so it is, and we have seen nothing yet to reconcile us to the discrepancies which we have shown in the various analyses of guano and of cow manure. There is nothing like uniformity of terms, nor any thing reconcileable to common people, in the fact of one giving a greater number of particulars than another; and we take leave to remind these gentlemen chemists that nothing tends to advance science so much as uniformity among the teachers and professors, and their published opinions. Different terms may in some instances mean the same thing, but analyses made and published for general information ought to be all reported in the same language and terms, and the particulars given under the same heads. If professors would but remember that they are writing for the public, and not exclusively for one another, it would be useful to them, and lead them to be intelligible in their lessons, that the public might learn with facility, and study with profit and advantage.

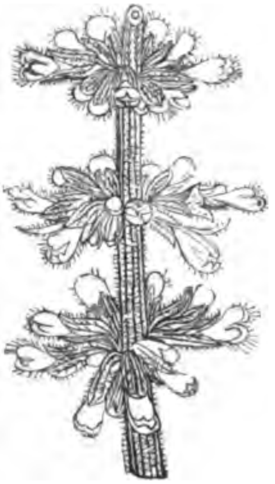
CHEMICAL AND OTHER MANURES.

There are so many ways of applying manure, that the quantity to be given is very problematical. He who sows the manure with the seeds does not use the quantity which is necessary when the whole ground is to be fertilized. Chemical manures, and those which are rapidly soluble, should not be put in much below the surface, because the rains wash it down quite low enough; and if we might advise, we should recommend all manures to be generally instead of partially applied, because you can better calculate the heart in the ground than when the crop is made to clear off all the fertilizing qualities in the first season. We dislike all temporary fertilizers, and all temporary applications of permanent manures. When the ground is all alike, there is some calculation of what it can do, and what it requires; but when the fertilizer is confined to the ridge which is sown, and the other portions of the ground go without, there is no drawing a fair conclusion. We know the doctrine preached is that of putting on only what the crop will take off, and then the ground is alike after the crop is gone. Experience does not justify this. Try the experiment; plant or sow on the drill, and between the drill, and see if they grow alike. Not a bit of it. Let the gardener apply his manure alike all over the piece, as if he were going to sow broadcast; he can then always judge what it will require, or if it will require anything, for the next crop, much better than if he partially dressed just where his plants are to grow. Salts of all kinds and chemical manures should always be mixed with three, four, or five times their weight of sand or light earth, and then laid evenly over the surface. He may then fork it in with the top three or four inches; and having given it a good soaking with water, it may be prepared at any time for sowing by merely raking the surface, and it is ready for planting without raking.

All ground ought to be dug well before any of the chemical or easily soluble manures are applied, because it does not answer to put them in so deep as dung is usually put. But the most even way of applying soluble dressings is in water, sufficiently diluted that the soil may be equally wetted three or four inches deep.

Among the popular manures of the present day there are many which are efficacious or mischievous according to the quantity. Salt, for instance, may be applied at the rate of 3 cwt. per acre with advantage; but Mr. Johnson says it may be given at the rate of 12 cwt. We know that crops have been killed with less, but that says nothing. Alum, by the same authority, must only be given at the rate of 40 lbs. per acre. Bone dust, or calcined bones, a ton and a half as the maximum, half the quantity as a minimum. Carbonate of ammonia, 160 lbs.; carbonate of soda, from 160 to 640 lbs. (a wide difference); Daniels' Bristol manure, half a ton; graves, half a ton; gypsum, 40 lbs.; Hunt's new fertilizer, 320 lbs.; Liverpool animalized manuring powder, 27 cwt.; muriate of ammonia, a pound to a rod; muriate of lime, 2 lbs.; nitrate of soda, 160 lbs. to the acre; pearl ash, 320 lbs.; phosphate of ammonia, 160 lbs.; rags, 3 cwt. to 12 cwt.; rape cake and rape dust, 6 cwt.; saltpetre, 160 lbs.; sulphate of ammonia, the most useful of all perhaps in gardens, 1 lb. to the square rod; sulphate of magnesia, 1 lb.; sulphate of potash, 2 lbs.; sulphate of soda, 2 lbs.; superphosphate of lime, 80 lbs. per acre; urate of London Manure Company, 320 lbs. These are, in general, the quantities published on the authority of the dealers, and adopted by Mr. Johnson in 1844; but the improved methods of applying them, and the facilities with which the best article can be procured, instead of the spurious, enable the cultivator to save from the quantities named, except when the article is distinct and alone, as sulphate of ammonia, or sulphate of magnesia. The mixtures sold by individuals and companies must be used according to the dealers' directions, because they alone know the strength. They are interested in telling us the best quantities, because manuring being the most costly part of cultivation, drives men to the best and cheapest market. Poittevin's disinfected manure, Potter's guano, Hunt's guano, Lane's carbon, Lane's humus, Law's patent manure, and some others, can only be appreciated after being used as directed by the vendors. They know the quantity most efficacious, taking price and usefulness into account. Many of these prepared manures are from night soil, the most valuable of all, if properly applied; and it is to be regretted that a single shilling should be expended in imported manures while millions of pounds' worth of the soil in this country are washed away in rivers, to the detriment of the water and the loss of the state. As, however, nine-tenths of the community do not know how to apply it, we will offer a few hints upon the subject.

It is easily disinfected with sulphate or muriate of lime; and if mixed with its bulk of peat earth and dried, it will be fit to transport any where, and will be found fourteen to one stronger than cow-dung.



SALVIA CONFERTIFLORA.

(*Pohl.*)

THE CROWDED FLOWERED SAGE.

The family of Salvias is a very extensive one, and embraces much diversity of aspect and character. Thus some species are truly shrubby, a greater number belong to the class called soft-wooded, while others again are truly herbaceous; and then, again, some species are perfectly hardy, and others can hardly be grown to their proper perfection, except they are submitted, during at least a period of their growth, to the atmosphere of a stove. A very great number of these species must claim to be regarded as highly ornamental garden plants.

Salvia confertiflora, though sub-shrubby, is, to a certain extent, herbaceous in its habit. It produces, in the growing season, very stout, vigorous, erect stems, which bear large, broadly-ovate rough opposite leaves, and close whorl-like aggregations of flowers, usually in strong specimens forming as it were spikes of bloom, of great length; the individual flowers are not large, but, from the quantity of them produced, have a very showy appearance; they are woolly, and of a bright orange-red colour. The ordinary blooming season is the autumn. It is a native of Rio Janeiro, from whence it appears to have been introduced by the Horticultural Society of London.

This is one of the plants that might be turned to account for late autumn flowering in the greenhouse. For this purpose its peculiar habit naturally adapts it, and, by proper management, this adaptation may be rendered more complete. To accomplish this, the plants should be kept from growing at too early a period of the spring; the middle or end of April will be quite early enough, and some may be kept still later, if possible, by keeping them cool, and rather dry, in a north aspect. The plants may be started in cool frames, and afterwards grown out-doors during the summer; or, if very large plants are required, they may be planted out in moderately rich ground for the summer, and then taken up very carefully and repotted in the autumn. There is, however, much risk in this plan, unless very expertly managed, and, on the whole, it is safer to grow the plants in pots throughout the summer. When taken up out of the ground, especially if the growth has been moderately luxuriant, the disturbing of the roots is almost certain to cause the plants to droop, and it not unfrequently happens from this that both the older leaves and the points of the shoots are lost, which is a great disfigurement. There is at the same time an advantage in planting out, if vigorous growth is at all an object. Two methods may be employed to obviate the evil referred to: the plants may be kept in pots, and shifted as necessary from time to time, the pots being kept plunged in the soil of the open garden; or, if the plants are not kept in pots, a spade may be thrust down all round them at a few inches distance, in order to cut the roots, and this may be done several times in the season. One great advantage in the plants being planted or plunged in the open ground is, that the roots are kept in a regular state as regards moisture—not sometimes saturated, and at other times parched; this equally moistened condition enables the roots to make good progress, and, consequently, the plants gain strength and vigour.

If they are grown in pots, they must be repotted progressively, as their roots increase, until the flowering stems have attained some height, after which their further growth may be promoted by careful watering, and the occasional use of liquid manure. A rich loamy soil is proper for them; and the pots, being large, should be well drained. When once started, they ought not to receive a check during their progress, if a good development of flowers is expected; therefore it is of the utmost importance that the supply of water be ample and regular. There is no necessity for nursing up the plants during this period; indeed, this would be highly injurious to them; it is much better for them to be fully exposed both to sun and air, in order that their growth may be robust rather than rapid. For the sake of variety, the stems of some may be stopped when they have grown a foot or so in length, in order to increase the number of stems; this will most probably produce a double effect, for they will most likely not then bloom quite so early; the spikes of flowers will by this means not be so fine and large, but there will be a greater number, and for the purpose of making a difference in the plants, it is desirable that some should be so treated.

In the autumn the plants must be carefully protected from frosts. Where there is the convenience, it is better to remove such plants as these and Chrysanthemums to a spare house, where they may have all possible ventilation by day, and the protection of the sashes at night. From hence they may be removed in succession to the greenhouse as their flowers are developed. After the middle of October, it is best not to water them too liberally, as in the low temperature of the greenhouse too much moisture about the plants—either at the stems or roots—will be liable to produce their decay. This should be borne in mind in reference to other freely-grown plants which are prepared for very late blooming.

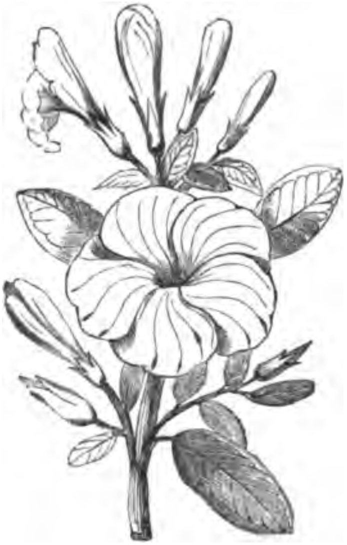
This Salvia should be propagated by cuttings taken off in April or May, and planted singly in small pots, and set in a mild heat; when rooted they may be shifted on precisely like the other plants, and ought to form good blooming specimens by the autumn. They will be useful for securing a later set of bloom. In managing the old plants, they should always be started so as to come into flower in succession.

LINUM TRIGYNUM.

(*Roxburgh.*)

THE THREE-STYLED FLAX.

There are many of our old and almost forgotten floral acquaintances, whose faces, when they are presented to us, like those of long absent friends, ever carry with them the passport to a welcome reception. Sometimes, too, as in human experience, our floral intimacies are, as it were, consigned for a period to oblivion, whilst we are eagerly forming new alliances and acquaintances; but these in course of time cease to interest us, and we are then content to renew our former friendships. This is a characteristic of humanity in its every phase; but is, perhaps, nowhere more strikingly exemplified than in the choice and culture of flowers. Real intrinsic worth seems to be held at a discount, as compared with novelty; and the consideration of the number rather than the nature of their floral friends and acquaintances, seems to bear sway over the generality of flower lovers.



The old *Linum trigynum* well illustrates this sentiment in its application to plant-culture. Years ago one might see it frequently in cultivation; and though in those days gardening had not reached its present perfection, yet sufficient skill existed to render manifest in its appearance the elements of a showy and handsome plant. Since then it has been neglected, and almost forgotten—retained, it may be, only by chance in some unfrequented locality of the gardening world, from whence, at the best, it has but few opportunities of being again disseminated as its merits deserve. It is a small greenhouse shrub, capable of being grown into a compact and well formed bush, of three or four feet high; the leaves are evergreen, glaucous, moderate sized, and elliptical; and the flowers are large, orange-yellow, and freely produced at and near the extremity of the shoots, and on little side shoots. The blooming season is various, throughout the summer and autumn, and the plants continue for a considerable period in bloom. It is a native of mountainous tracts in the north of India, whence it was introduced to this country about 1784. In India it blooms in March and April; and when kept in stoves, as it formerly was in this country, it produced its flowers in October, November, and December.

Its cultivation is simple. The plant grows freely in any good loamy compost, such as is used for free-growing greenhouse plants. Cuttings taken off early in April strike root readily in sand, in a little heat; these should be potted as soon as rooted into small pots, in a compost of equal parts loam, peat, and leaf mould, kept in a warm greenhouse or frame until established, and then at the usual season placed for the summer, with other greenhouse plants, in a sheltered place out of doors. In winter they must be lodged in the greenhouse, and treated as proper inmates of that structure. From the first, the young plants should be often topped, to keep them bushy; not more than two or three joints should be allowed to grow without topping, until the plant is formed, and then it may be allowed to grow more at large to ensure its flowering. The plants should of course be shifted from time to time, as the roots become numerous; and if it be intended to produce a perfect plant, the roots must not be too much limited, but allowed fair scope. The compost for mature plants may be formed of equal parts loam and peat, lightened, if necessary, by adding sand; and if moderately large pots are used, they must be well drained. In the summer season the plants may be set out of doors along with other greenhouse plants, and in the winter may occupy any convenient part of the greenhouse. They require at each of these periods respectively the usual care in watering, requiring much less, of course, in winter than in summer, and always when watered receiving enough to thoroughly moisten the soil. The leaves are liable to be damaged by thrip and red spider, the best preventives of which consist in frequent syringings, and keeping a moist atmosphere. After they become affected, there is perhaps no better application than sulphur, which should be dusted over every part.

HORTICULTURAL SOCIETIES.

THE ADVANTAGE OF AN ACKNOWLEDGED LEADING SOCIETY.

In all classes comprising large bodies of people, there should be a head. No great community can hold together without it. In no case is the want of it so generally felt as in the five hundred societies which profess to promote floriculture and horticulture. Each views its neighbour with jealousy rather than emulation; and members think infinitely more about upholding their individual society than of advancing the science. In our opinion, floriculture should be like freemasonry: all who wish well to it should be joined in one common brotherhood. Their care should be to act in unison. They should take their guide from some head society, some head board. Go where you will, you find the Freemasons all alike. The same principles guide them all; and although there are some masonic bodies, or lodges, as they are called, which exact very large subscriptions, and others require very small ones; although some comprise among their members noblemen and wealthy persons, and others chiefly working men, all aim at one end, and hold the same sentiments. Difference of subscription is to meet difference of station. Poor men are content to meet once a month at a frugal supper; the more wealthy may choose their periodical dinners; but the advancement of the order, the exercise of its benevolence, and the conservation of its principles, actuate all alike. There are no divisions, no dissensions, or at least such things have been very rare; and our notions are, that the same leading principles should guide all floral societies. We think there should be a code of laws laid down for some central society, which should be looked up to, and these laws should form the fundamental rules of every society in the kingdom. These laws should apply to all localities and all circumstances, and branches should be formed all over the kingdom. There should be a tribute from the branches to the chief society, and for this tribute an equivalent should be given, either in the way of a medal, to award as a prize, or printed rules for distribution. It is not necessary to make the contributions from the branch societies large; on the contrary, they should be small enough to come within every man's means. The branch societies should keep a register of the names and addresses of all their members, a copy of which register should be periodically transmitted to the central society. By these means there would in time be a sufficient number of members enrolled, under a solemn pledge to be honest, to be able to commence something like honourable rivalry through the country.

It will be obvious to the meanest capacity, that anything like uniformity in the rules of a hundred different societies, raised by persons of very different capacities, would be impossible, except they were founded on one model; and although there may be several ways of carrying an object out, they cannot be all equally good. With regard to the very foundation of a large community, the greatest attention must be paid. It is necessary that they should apply to all localities and all classes; that they should be binding equally on all ranks and under all circumstances. For instance, there should be one rule, that the members of the society should be unlimited, and that they should be governed by a committee, elected by and from among themselves. Other rules should define the objects of the society, which should be the advancement of the science, by the award of prizes for the best productions shown by persons whose growth and property they are. These fundamental rules may also define the mode of electing officers, the times of election, the mode of appointing judges, and how they shall be qualified. The time for prizes, subscriptions, and mode of collecting or receiving them, and such other matters as are equally applicable to all places and all circumstances, should be accurately, carefully, and plainly laid down, so that, so far as the main principles are concerned, there should be uniformity throughout the whole kingdom. The members of every branch should be obliged to declare, in the most unreserved manner, that they would abstain from all sorts of trickery themselves, and prevent it in others, so far as they could; that they would expose fraud and unfair dealing whenever it came under their notice; that they would report, or cause to be reported, in the best way they could, all attempts to deceive, all instances of persons showing the productions of other people; that they would do their best to make known all the best novelties that came under their notice, and promote the exhibition of such novelties at one or other of the branch shows, and wherever practicable to the London board, and also make known to the heads of their respective societies all attempts to put forth worthless subjects as superior productions. That they should, in fact, pledge themselves as earnestly as possible to follow out the orders and intentions of the central board, that floriculture might be purged of its evils, the trade limited to those who became pledged equally themselves to do right, and, so far as in them lies, to prevent others from doing wrong. This kind of understanding, begun among only a few who were in earnest, would soon enrol all those who meant honestly, and enable amateur and professional florists to select those they proposed to deal with from such only as were members of the principal society or one of the branches. It would cure the exhibitors in some of the great societies of collecting their fruit and flowers from a number of persons, and showing the results as their own. It would prevent competitors from purchasing things at Covent-garden to get prizes at another garden. It would stop begging, borrowing, and stealing, to make up subjects for exhibition, and disheartening honourable persons, who, under the present system, see the utter hopelessness of contending against such mighty odds. It would check the growing evil of sending out a dozen varieties of anything, when only two or three are worth growing. It would enhance the value of the best things, and rid us of many that are useless. At present many societies so notoriously wink at the showing of other people's productions as the exhibitor's growth and property, that he who would show honestly may as well stay at home; and the knowledge that such is the case, induces others, who would not otherwise think of such a thing, to imitate the example and out-Herod Herod. We know one instance in which an individual's flowers, known to be good at all times, were excluded, because the owner had, to oblige a gardener, who never paid for it, parted from a rather scarce rose. The person thus excluded let two or three of the showers have his flowers, and they went in and beat all those who had been collecting them from all quarters. Such was the feeling, and such is the feeling still, in that society, that men, in other respects honourable, think it almost creditable to cheat the managers by showing other people's productions. It cannot, therefore, be too strongly recommended to those who wish to see the science upheld as respectable and worthy of support, to be moving in their several localities to get up something like a society pledged to be honest, and ready to co-operate with any central London establishment that may be founded for that purpose. It is a good time of year; and if there be any Freemasons, they may adopt one principle from that body with advantage, that of making every member's subscription pay a trifle to the head society; if it be but sixpence a year, it would be advantageous. It makes all the members all over the country one general body, however different may be their rank, station, subscription, the nature of their prizes, and the produce they emerge. If the members of a society pay a shilling a month, a halfpenny should be retained as the tribute, and the rest spent. If the subscription be a pound, the tribute should be the same, for it will pay for keeping the necessary registers, and enrolling all removals, deaths, and acquisitions of members in one register—for keeping up the communication with each other—and perhaps for printing, if necessary, the general register for the use of each separate branch. There is not a local society but might avail itself of this advantage, and the sooner it is reduced to some plan and system the better. However it be started, and by whatever society it be set on foot, it will have our support, because we believe some such thing to be necessary for the well being of the science of floriculture.

THE DUTY OF COMMITTEES.

There is nothing upon which the success of Horticultural Science so much depends, as on the management of Societies established for its promotion. Nor is there any one thing so detrimental to it as the mismanagement of these establishments. It would be invidious and perhaps unwise to mention the names of any which have been open to objections; and more particularly as so many deserve reproach, that if we named those only which we know to be bad, we should omit many equally deserving censure, simply because we do not know them. It would be well, therefore, if the Horticultural Societies all over the country would take as meant for themselves all that applies to their own particular cases. We must first make ourselves understood with regard to our ideas of the intentions with which these establishments were founded, and are supported; and this may be done in a few words. They are intended to promote the advancement of horticultural science, and this brings us to the means by which they profess to accomplish their objects. They have to excite the emulation of gardeners and their employers, and also of amateurs who are neither the one nor the other. This they have attempted by public exhibitions, at which cultivators, professional and otherwise, are invited to show their best productions, for prizes, and at which the public may be gratified by witnessing the most beautiful subjects grown in the highest perfection. Now it requires no great penetration to see that the following ought to be something like the main points to be looked to for carrying out these objects.

First,—To throw open all prizes to those subjects that should attract the greatest number of competitors.

Secondly,—To take care that the subjects themselves should for the most part be such as will most gratify the public.

Thirdly,—To appoint for judges, persons whose character as censors should be above all suspicion, and advertize them to the world.

Fourthly,—To announce publicly, and in good time, the rules or standards by which those judges are to estimate the merit of the different productions submitted. To do all this as it should be done, there must be something like attention to the following details.

With regard to the means by which the greatest number of competitors can be attracted, it must be obvious that one must be the number of prizes given in each class; and to do justice in this way there must be no frivolous distinction in classes. Let us, for example, take any one flower, say Roses, or Dahlias, or Carnations, or Picotees, or Pinks, or Ranunculuses—no matter which; there ought not to be less than a dozen varieties exhibited by each; and there should be certainly not less than ten prizes. Most who excel, either from their mode of cultivation or the quantity they grow, may probably time after time take the first three or four prizes; but there would then be six or seven more to be taken by the younger aspirants to horticultural honours, a great number of whom—who would never compete for the three or four, because there could be no chance for them—would gladly avail themselves of the opportunity of showing when there were ten; and there would thus be ten successful exhibitors to exult in the prizes they had taken, instead of three or four, as is too often the case; besides which, the public would be gratified with many more stands of flowers: whereas, when there were but few prizes, and these all, as it were, bespoke, the numerous showers, who know they cannot successfully compete with the three or four best growers, would naturally, and in many places do abstain from showing altogether; and the consequence is, that having no excitement, they do not cultivate with half the enthusiasm. To make this feature still more complete, there should be a very gradual descent from one prize to another—say a tenth part difference. If the first prize be five pounds, the second ought to be ten shillings less, and the third ten shillings less than the second, the fourth ten shillings less than the third, and so on to the last, which would only be ten shillings. If the first prize were one pound, the second should be eighteen shillings, the third sixteen, the fourth fourteen, and so on; the smallest being two shillings. The great advantage of this mode of dividing money given for prizes is, that there cannot be so much injustice done when the merits of flowers, on summing, are very nearly balanced; for every body who has been a strict observer of exhibitions will admit, that it is often very difficult to decide which is the better of two stands, and that it is a grievous disappointment to a shower when he sees that even a single point throws him out of all the benefit, and makes the difference between his winning twenty, or ten, or five pounds, and winning nothing. We can say conscientiously, that it has been a source of great vexation to us and other judges to be obliged to put flowers first when the second were all but as good; yet the difference between the first and second has been as ten pounds, and four or five pounds, and two; all of which vexation to judges, and mortification to exhibitors, would be avoided if it were only a difference of ten per cent. We cannot, then, too strongly insist upon the propriety, and for the sake of the science we might say, necessity, of observing this rule most rigidly. We have to check ourselves frequently from mentioning the names of societies in which the evils we speak of are conspicuous; but we set out with a determination, and must abide by it. We have before us now the schedule of one society, of which the committee of managers are nearly all showers, and the prizes have year after year been contrived so that all should have a turn; rarely more than three, never more than four prizes for any one class; and the classes are made on purpose that the committee men shall not run in each other's way. It is even carried so far as to make distinct classes for amateurs and their gardeners, although it must be obvious to any man of common sense, that it cannot matter one farthing which shows from a collection, the master or the man; but this was done that the man should show as well as his master: and so the amateur who kept no gardener at all, had not only to contend with a man who kept an experienced gardener, but he had also to show when there were only three prizes, all bespoke for the committee men by their superior advantages; but his chances of winning at all were shut out, because, to increase the number of classes, each class was limited in number and amount of prizes. The end of all this is, that except the three or four who can win, few would attempt it; and the winning flowers, in consequence of the want of competition, are frequently very discreditable. We trust we have shown good reasons for adopting the system we advocate; but, besides multiplying the classes in any one flower with regard to the persons who are to compete, there is another mischievous plan advocated and practised in many such societies, — the plan of multiplying the classes by awarding prizes to different numbers, as if to give the monopolizing managers opportunities of winning a plurality of prizes for the same subject. Thus we see prizes for the best thirty-six, the best twenty-four, the best twelve, and the best six—not more, perhaps, than two in each class; and then it is a common thing to see, Best thirty-six, Mr. A. B., second best, Mr. C. D. Best twenty-four, Mr. C. D., second best, Mr. A. B. Best twelve, Mr. A. B., second, Mr. C. D. Best six, Mr. C. D., second best, Mr. A. B. This is by no means rare, and if all the schemers in England had laid their heads together to destroy confidence, nothing more calculated to effect the purpose could have been contrived.

Again, there is another system equally worthy of the schemers who originate it. The members of the committee are individually famous for something; each has some fancy, which, as he thinks, will do to give a prize for, and nobody else grows, or at least cannot be so strong in as he is; and, accordingly, it gets placed on the schedule for a prize. If, however, any other of these disinterested managers is upon the same fancy, a second prize is offered; and as it is doubtful which may be first, and which second, the value of those prizes is generally not very different. If anybody can do balsams or cockscombs well, prizes are given for them; if not, we hear nothing of them, and so with any other subject. One man has provided himself with a collection of gooseberries,—a prize must be given for the best collection. One has a first-rate standard pear tree of a given variety,—such pears must not be forgotten. We could go through the whole business of one of the meetings held for schedule making, and give such instances of selfishness, such utter contempt for the true interests of horticulture, as would make the public disgusted with the things they are supporting; and we maintain, that were it not for the several societies in which all members are equal, all pay subscriptions, and all depend on their own funds alone for their prizes, horticulture would have been destroyed as a science, by the meanness and duplicity of the people who unfortunately have succeeded in worming themselves into the management of Horticultural Societies. That there are exceptions to this worst of all descriptions of establishments, we are free to confess, but they are by no means plentiful, and perhaps all are more or less tainted with mismanagement.

The choice of subjects for which prizes are to be given, should be made with a view to the creation of a fine exhibition; and the less subjects are confined the better—or rather, the less prizes are confined to particular subjects the better. In plants, it may be unfair to make those who cultivate greenhouse plants only, exhibit in common with those who grow stove and greenhouse plants too; but when we consider that a grand display is of the first importance at a public exhibition, the circumstances of the locality must guide us a little. If there are but few plant growers, and we want all we can get, it will be a fair question, whether it is better to give ten prizes for the best twenty, for plants of any kind, and so have all the advantage of the fine collections of stove-plants, or to give two series of prizes of half the amount for two different classes,—stove in one, and greenhouse in the other. We have seen with the greatest advantage the prizes given for the best twenty-four plants of any kind. So far as the public is concerned, the show in some places would be the better—for instance, when there are only two or three who can show stove plants at all: but when there is an abundance of growers and plants too, separate classes may do better. But to give, as we have seen many do, separate series of prizes for very many different subjects, without any regard to whether they are objects of interest, or deserve particular encouragement, or contribute much or little towards the show, is really quite ridiculous, and exceedingly vexing to all true friends of gardening. We have, among other preposterous schedules now before us, one which gives a first and second prize only to each of the following :—Balsams, Cockscombs, Hydrangeas, Heaths, Roses, Annuals, Stove plants, Orchideous plants, Pansies, Dahlias, Cinerarias, Petunias, Apples, Pears, Gooseberries, Currants, Melons, Pine Apples, Grapes in-doors, Grapes out-doors, Figs, Peaches, Nectarines, Raspberries, Lettuce, Cabbages, Potatoes, Peas, Beans, Carrots, Turnips, Beetroot, and thirty other articles; and the show was not worth going to. Plates of fruit that would be almost thrown away in some places, and would hardly be tolerated at a stall in London, covered the tables,—four-fifths of them out of one garden; and the award of the prizes was as might be expected from such a schedule. Mr. A. B. C. of D. was almost the only name that appeared, and he made a regular sweep of prizes, because there were none to compete with him, from the fact, that for two or three years the prizes had all been so parcelled out as to make him the recipient of a vast majority. Had there been a series of ten prizes for the best collections of fruit—not less than five or six or any given number of varieties, so that he could have taken only the first—there had been twenty competitors for the others, and a better show of fruit: but to give all these prizes where there was but one first-rate establishment in the neighbourhood, was to throw every prize into the owner's lap; and rather than miss any thing, raspberries long gone by their prime, gooseberries dead ripe and out of all colour, and a dozen other things perfectly unfit for table, were brought, as if the judges were bound to give prizes for rubbish: the fault was in the schedule. But it is time all this nonsense were done with. We see it more or less in most schedules, and hope to see an alteration in very many respects.

It is a pity that any exhibitor should have a voice in the management, unless he can look to the advantage of the science of horticulture, instead of himself; for, unless this be done, the best supported society will dwindle into a little community of selfish grasping sharpers, eager to seize upon any thing that is to be had, and careless how the thing be accomplished; and the public will lose all interest in time. By far the most valuable supporters of the science—those who aspire to win prizes for the honour of them—will be shaken off, and all honourable rivalry will cease. It is requisite that those who have been acting as we have described—and we know whole committees who have—should begin to think it time to desist; and first making out an honest and judicious schedule, they should find honourable men for judges, publish the laws by which things are to be judged, and if it be only to prevent exposure, give every cultivator a fair field.

RULES FOR JUDGING.

The necessity of publishing a resolution or regulation, as to what standards are to be used for judging the productions exhibited at public shows, ought long since to have been manifest to the committees or managers, and yet more than half the schedules of prizes are issued without the slightest intimation; so that the adoption of proper standards only does half the good that might be done if the proper notice were given. Exhibitors do not know what they are about, because they know there is but little dependence on taste; and in consequence, some speculate on large flowers, some on perfect flowers without reference to size, some upon colour, and some on novelty, without considering any other point. Now those societies which have resolved on judging by the standard laid down by Mr. Glenny* (and a vast majority have so done), and instruct their judges to that effect, have only half done their work unless they communicate that fact in their schedules. We know, indeed, that even where the committees have come to no decision on the subject, they nevertheless calculate on judges adopting them; for, indeed, the advance of florists' flowers in particular has been so great under the new standard, that they have already surpassed what our predecessors called the criterion, and have left the assumed perfections far in the rear. This was the natural consequence of setting up a standard which could not be reached; and if the Floral Societies would at once avow that they will have the productions judged by that standard, every exhibitor would become a judge, and almost know his fate by a glance round the stands; each would know exactly what he had to strive for, and his study would simply be to produce his flowers as nearly like it as possible.

ADVERTIZING THE INTENDED SHOWS.

Some of those Horticultural Societies which apparently depend on their own resources only, are too apt to neglect giving publicity to their intended meetings, from a mistaken notion that they concern nobody but their own members, and that they can inform all those by letter, and therefore that any further publicity that would cost money would be a waste of the funds. Perhaps this is the strongest possible case that we could select to justify the neglect or refusal to advertize. Let us consider whether even such a society as this is to be exempt from the charge of limiting the good they do by their parsimonious and inconsiderate privacy. The professed object of all such societies is to promote the science, to engage men's leisure time in rational employment, to stir up their honest pride, and excite emulation ; and by example as well as precept to stimulate them to exertion in a quiet and delightful study which weans the mind from less healthful indulgences of the outer world. Now those who defend the propriety of doing all this in private, content themselves with carrying out only one half their avowed objects, and only do a small portion of the good they might do by a little more expenditure. If it be good to encourage these societies at all, the more societies there are, the better it must be ; for it is quite certain, that if it improve the morals of the working and even middle classes to engage their attention in the delightful pursuit of horticulture in one village, it must have the same tendency in another; and no one will dispute, that where Horticultural Societies are established it has a manifest and highly beneficial tendency. The people then of a village in the Isle of Man, of the colony of New Zealand, or at Hong Kong, may establish a society and "do good by stealth," believing all the while that their business concerns nobody but themselves or their own members ; but they forget the force of example,—they do not consider how many localities would be stirred up to do the same, for very shame that with greater advantages about them they are doing nothing. The fact of reading in a newspaper that in a certain remote place where they have to surmount all sorts of difficulties they have got up a Horticultural Society, may induce many who neglect so prolific a source of good to rouse their neighbours to "do likewise ;" hence it is that we conclude that societies do only half the good they might do when they neglect to show the public what they are doing. It is not enough to do good anonymously; it is not enough to be virtuous in private. Nobody will dispute that the principal esquire in a village and all his family might pray at home, and practise all the virtues in secret, and that they might be in all respects unexceptionable ; but, will any body tell us that they will do one half the good that they would accomplish if they attended public worship, and set a good example to the rest; or that their private charity would do half the service that would be done by their heading a list of charitable neighbours, and by their open proceedings stimulating others to similar acts ? The thing is out of the question. We hate ostentation, but we also disapprove of hiding a light under a bushel. Man is an imitative animal ; and the more good examples there are placed before him, the more likely he is to follow some, much to his own benefit and to the advantage of his neighbours. Nor do we care what motive first causes a man to follow a good example ; it may be pride, it may be envy, but by doing good actions frequently it may become habitual; and the very act which originated in pride or envy may be continued with a full sense of its importance. In Horticultural Societies the proceedings are fraught with good : the loose idler is led to healthful recreation ; the drunkard is insensibly led to an amusing occupation, and everybody engaged is improved in the knowledge and practice of gardening. That village, then, which has not its Horticultural Society, or which is not in connexion with such, loses a great means of improving the morals and habits of the inhabitants. Whatever can induce the wealthy classes to institute such means, does enormous good for society at large; and nobody need be told that nothing stimulates men so much as the knowledge that people less powerful, less influential, are doing something that they, the more powerful and more influential, have not done. This fact alone has been frequently the cause of many a good institution, benevolent as well as scientific. The wounded pride of a man who hears another admired for some good action, will do much to stimulate even a bad man to outdo the good one in amount or in exertion. Upon these grounds we maintain, that the very first duty of individuals and of societies whose example may be profitably followed, is to place that example before the public in its best and most alluring form.

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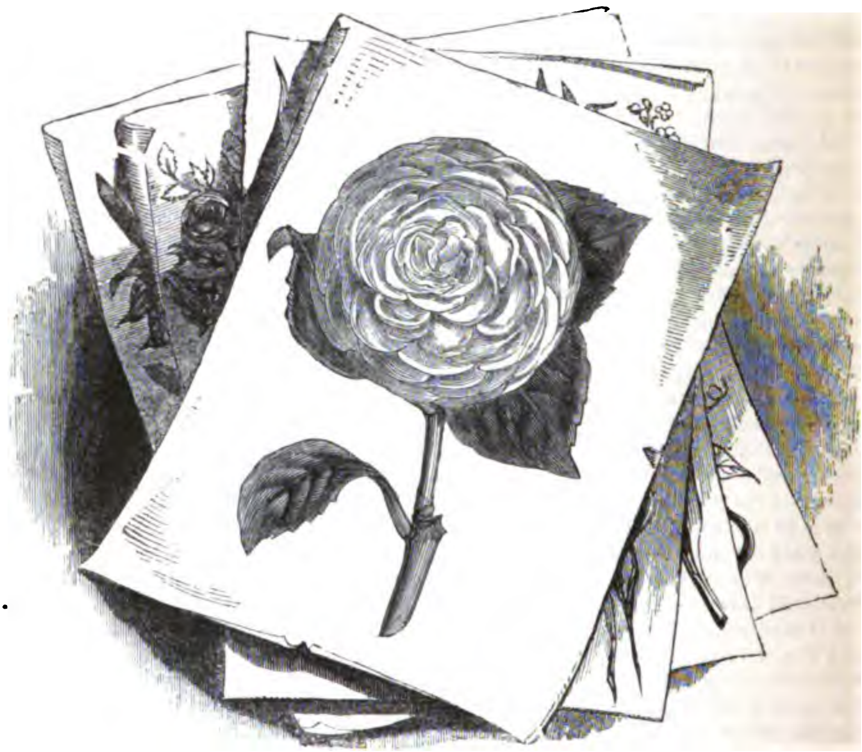
* Glenny's "Properties of Flowers and Plants."

Every Horticultural Society ought to consider, that, however much good they may do at home, they should publish their doings for the benefit of those in more neglected places. If there be but one active man in a particular locality, desirous of establishing a society, that man's work is more than half done if he can point out to his neighbours that some less considerable place has one; so that if the managers of the most isolated society in the kingdom or the world mean to do good generally, their very first duty is to publish its objects to the world, even if they knew that it would not produce a shilling return to the funds. And, if it be right to do so in such a case as this, how much more desirable it is where there is a chance of inducing some distant friend to pay a visit, or of opening a correspondence with horticulturalists afar off! It need hardly be mentioned here, that the publicity given to the proceedings of Horticultural Societies leads to the purchase of new flowers, the introduction of novelties from a distance, and the general advancement of all the interests connected with gardening. We ought not to have more to urge to convince the managers of societies, however isolated, that their first duty is to advertize and make public their proceedings.



THE CAMELLIA AS A WALL PLANT.

Though often seen, and deservedly esteemed, both as a pot plant and planted out in the conservatory, the Camellia is by no means frequently met with planted in favourable situations against the open walls; and yet in such situations, with a proper course of preparation, and very slight protection, they may be had in a tolerable state of perfection in the latitude of London. We shall proceed to treat of them in this view, under the heads of *aspect*, *soil*, and *protection*.

Aspect.—In selecting a situation for these plants, persons unacquainted with their habits would be liable, inconsiderately, to commit an important error. For all tender plants it seems natural, and very generally is proper, to select the warmest aspect, as the best suited to their outdoor cultivation: this warmest aspect is of course that facing the south. Now there are two main reasons why this would not be a fitting aspect for a Camellia; first, it blooms early; and secondly, it makes its growth early; and under the excitement given to the plant by the warmth and shelter it would enjoy in a southern aspect, these precocious habits would be certainly not held back, probably in some degree encouraged. The consequence of this would be, that both bloom and young shoots would suffer from cold, or else, as an alternative, their beauty must be too much hidden from view by the covering afforded to them as a necessary protection against cold. This inconvenience is to be avoided by selecting for the out-door Camellias the coldest and most backward aspect, that is, the northern; here the vegetative powers of the plant, receiving no undue stimulus, remain dormant until a later period of the spring, when there is little damage to be apprehended from cold either to the blossoms or shoots; for though they may then flower and grow, before it would be safe to expose entirely, plants of their degree of hardiness to our common spring climate, yet the protection afforded by close contact with the wall will be then sufficient to preserve them.

Soil.—Whenever tender exotics, no matter what their degree of tenderness may be, are submitted to a course of treatment by which they are supposed to acquire a greater degree of hardiness than is usually attributed to them, the manner in which the soil is prepared for their roots is of the first degree of importance. The proper mode of preparation is thus:—In the first place, if against a wall or building, see that there is no drip falls near enough to render the soil wet, nor any leakage from drains or other sources that would produce a like effect. Then take out the original soil from a space three feet wide and a foot in depth at the front, and six inches next the wall, so as to have the bottom sloping outwards. On this ram down firmly an even layer of six inches of concrete, formed of lime and coarse gritty sand, or of clay. In the front, of course, there must be egress for the water which this concrete intercepts in its downward passage. On the concrete lay six inches of roughish brick rubble, broken into lumps as large as eggs, or larger; this will bring up the front to the original level, and the back six inches higher; next place a layer of one thickness of turf all over, and on this six inches of rough turfy loam and peat, three parts of the former to one of the latter; then one foot of good compost, made of three parts turfy loam, one part peat, and enough rough gritty sand, added to make the whole porous. The soil will thus form a sloping border, about a foot and a half higher than the ordinary level at the front edge, compounded as follows:—six inches of concrete; six inches of rubble; a layer of turf; six inches of rough soil; twelve inches of compost. All the ingredients of the soil should be in a good workable condition, neither wet nor dry, but in a medium state of moistness.

Protection.—This necessarily includes two considerations,—the preservation of the roots, and the preservation of the branches; the former is most important in the autumn, and thence onward through the winter; the latter from the commencement of severe frosts, as long as they continue.

A very good and cheap material for protecting the roots is dry sawdust, spread over the soil to the depth of six inches, and rather more about the base of the plants; this should be put on before the soil gets soaked with rain in the autumn. The same thickness of tree leaves would also form an efficient protection; or if neither of these are convenient, almost any other material will do, such as dry litter, or fern, or old tan, or coal ashes. Another material, easily obtainable in the country, very efficient, and available for composts when required no longer for this purpose, are thin turves of green-sward, about a foot or rather more in diameter, cut and dried in summer, and when used laid over a thin layer of leaves or litter, in the manner of roofing tiles, beginning at the outer edge.

For the tops, various means of protection may also be made use of. In these days of cheap glass, those who choose to excel in these matters might have glass sashes made to lean against the wall, to be placed there permanently for the winter season. In extremely severe weather, a mat or so in addition would afford protection enough. What would be equally efficient would be a frame work thatched with straw or fern, and set before the plants; but as this would exclude light, it would be desirable to remove it during the day in all fine dry weather, replacing it again at night. In any case these covers will be all the more efficient if large enough to stand over the principal part of the border as well as the plants. Where neither of these plans can be adopted, mats may be nailed over the plants—a single mat in thickness in ordinary frosts, and two mats in more severe weather; they should be so contrived as to admit of being opened and turned back off the plants during fine weather.

The few other particulars of treatment required need not be enlarged on. They consist of such operations as the proper training and thinning where necessary of the branches; early thinning of the flower buds where they grow in clusters; watering in very dry weather during the earlier part of summer; and such like routine matters.

We may be asked, why recommend the growth of Camellias under such circumstances as these, when they can be had in greater perfection in other departments of the garden? In the first place, many may grow them this way who cannot, because they have not the means, grow them in any other. In the second place, those whose means enable them to grow them to greater perfection in their greenhouses, may thus have their season of blooming extended, and so secure a greater variety among their out-door plants. There is, in fact, no good reason why those who choose to grow Camellias in situations such as that which has been described, should not do so if they please. We have seen sneers at the mention of Camellias as shrubs in the open borders, because "they are so inferior to the plants in-doors;" but we have also seen very interesting plants thus grown within the county of Surrey, and these plants have produced their flowers with tolerable freedom for many years in succession. There is a great deal of interest attending even a very moderate degree of success in the culture of such plants as these in the open air.

POLEMONIUM REPTANS.

(*Linnæus.*)

THE CREEPING POLEMONIUM.

The plant which is here indicated is a herbaceous perennial, of small stature, seldom reaching so much as a foot high, producing from the roots numerous elegantly pinnated leaves and flower stems, bearing at the top a small panicle of blue flowers, formed of five somewhat ovate petals; the flowers are produced in July and August. The plant is a native of the northern parts of America, and is perfectly hardy in this country. It belongs to Polemoniaceæ, the same natural order which contains the Phloxes.

As an ornamental perennial, this plant is well worthy of a place in the flower-garden, where it is of course, from its dwarfness, most properly kept near the front. It may also be introduced on rock work, when that position is not entirely devoted to the more minute Alpine plants. In either position it is of the easiest culture, requiring only to be planted in the ordinary soil, and watered in very dry weather. It may be propagated with facility by parting the roots; or more extensively by its seeds, which are usually produced freely, and from which strong plants for blooming one season may be raised, by sowing about June in the preceding year, and transplanting in the autumn. It is one of those plants that does not vary much, if at all, when raised from seeds.

Those who have shrubbery borders of any extent, would find it conduce much to their enlivenment during the summer season, when the walks leading through shrubberies are sought for the purpose of promenade, to sow a considerable number of the easier growing and easily obtained perennial plants, of handsome appearance, for the purpose of planting them in groups and patches near the walks, in those parts where room could be found for them in front of or between the forwardest shrubs. For this purpose the *Polemonium reptans*, as well as *P. cæruleum* and *P. sibiricum*, would be well adapted.

IMPROVEMENT OF SMALL FRUITS.*

The improvement of the various kinds of small fruits which are cultivated in gardens, and the due adaptation of them to the various purposes for which they are held in requisition, is a matter deserving attention. There are scarcely any of our smaller garden fruits that might not be very greatly altered and improved in many ways; and yet it is seldom that any attempt is made to improve them: they seem to be almost universally regarded as beneath consideration in this respect. That such kinds as those alluded to, do, however, possess importance, whether regarded as dessert or culinary fruit, may easily be seen. Suppose, for instance, that strawberries, and raspberries, and gooseberries, and currants, were interdicted, would not their loss be felt? And what would supply their places? Just in proportion as the loss of them would be felt, must their importance be estimated; and, judging of them by this rule, it would assuredly be very considerable. None of the fruits already alluded to for the sake of illustration, present us with the highest excellence of which they are capable, or afford us the variety they are adapted to supply. The field of experiment is boundless, in this direction. We have, it is true, of most of the fruits alluded to, varieties which are remarkable for various good qualities, such, for example, as precocity, lateness, size, high flavour, &c.; but there are few varieties in which as many of these good qualities as might be, are combined. It is notorious that early varieties are often tolerated on no other ground than that of precocity. Varieties possessing size in any remarkable degree, are almost as notorious for the absence of the higher qualities of flavour. And late varieties, if they do more generally possess higher flavour than early ones, are often equally with the latter deficient in size. Now when it is remembered that such considerations as these are applicable more or less to every kind of small fruit which we cultivate, it will appear that there is very much which might be done, many steps which might be taken, to effect this work of improvement.

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* From the *Gardeners' Journal.*

And if the goal is distant, and the length of the journey should affright any from the road, it should be remembered that vantage ground is gained at every step. Not only does every advance constitute an improvement in itself, but increased facilities for further advances are at the same time secured.

What might be done for the strawberry? Almost all our present varieties fruit early in the summer, and are comparatively soon gone by; this is to some extent remedied by the skill of cultivators in providing succession crops, but why should not later varieties be originated which would produce their fruit so that naturally a longer succession might be realized? Good late strawberries would be especially valuable. Something has already been done in this way. Not very long ago there were exhibited some fruit of a variety raised at Bicton, and named the Bicton Seedling—a useful late white fruit. Why not from this and other late varieties now cultivated raise others later still, and so carry on the strawberry season throughout the summer? These fruits if of good quality would be no more rejected in August or September, than in June or July. And if such things are thought lightly of now, it is only because the later varieties we possess are poor in quality compared with others. Here another avenue is opened. If their quality is indifferent, improve it: cross-breed with varieties of high flavour, and that flavour will sooner or later be secured in the late fruiting varieties. Objections might be raised even to this. How, it may be inquired, can those varieties, possessing high flavour, whose season is past, be obtained to hybridize the varieties which are naturally late? The importance of the result must here supply an inducement to resort to artificial means. Some of those kinds possessing the quality of high flavour must be treated so as to cause them to flower late—as late indeed as may be necessary, and thus the means of hybridizing must be provided. In extending the strawberry season late into the summer, the Alpine varieties might be taken as the basis of a series of experiments; but in this case there would be abundant opportunities for improvement both as regards size and quality.

What can be done for the raspberry? Perhaps less than in most other kinds of small fruit. It is not clear that the flavour of the raspberry could be at all improved. There is probably not much to be gained in the way of imparting to it variety of appearance. The best varieties at least possess the property of size, in a considerable degree; and though this might be enlarged upon, yet it does not seem to strike one as a very necessary change; some of the present varieties, when well grown, may indeed be considered large. There does, however, seem to be one point at least on which an improvement might be wrought. Notwithstanding that the fruit is held in such universal estimation, the raspberry season is but of short duration. True, there is a double-bearing variety, as it is called, which fruits later than the other kinds; this is valuable, so far, in itself, but we also take it as the earnest of something further. It is, in fact, just the thing to work with; and we have no doubt that a little well-directed energy would very shortly produce from it varieties which would materially prolong the raspberry season.

What can be done for the gooseberry? That the gooseberry cannot resist the power of improvement to which we are referring, there is ample evidence in the production of the prize varieties, for which Lancashire is famous. But the Lancashire growers breed only for size; that quality they have indeed stamped upon the fruit in a very remarkable degree, but this of itself is not enough for the dessert, nor yet for the culinary department; quality, not less than quantity, is a necessary recommendation in the garden of the connoisseur. Gooseberry growers may, therefore, busy themselves to impart the flavour of the choicer kinds to the large show varieties that are now chiefly raised; and, in doing this, they will have effected an improvement worthy of the effort. But why not also prolong the gooseberry season? It is fully short enough. Some of the early kinds might, in time, be pushed a little nearer the vernal equinox than we now have them; and this early race would not be injured by increased size, and more concentrated flavour. Then, again, with the late varieties. Might not new forms, later than any we now possess, be obtained? and would not, in this case also, additional size constitute a further improvement? These results are only waiting the well-directed efforts of some zealous individual to meet a full realization.

What can be done for the currant? We see no reason why bunches of currants should not, for size, bear a closer comparison than now, with bunches of grapes. The thing is by no means so ideal as it might at first seem to be. Were the berries double the size of those of the largest of our present varieties, and these, borne as we now see them, occasionally, from a dozen to a dozen and a half in a bunch, we should have a very respectable approach, if not to the clusters of Eshcol, at least to the more ordinary range of our cultivated grapes. Some of the varieties bear fruit which is less acid, and less woody-tasted, than that of others: these qualities would, of course, be required in the new and improved series. Then, again, currants are a fruit which it is often considered desirable to keep for some time—some months indeed—on the trees. It would be worth attempting to obtain varieties which would hang better than our present varieties do. On the subject of improving the present varieties of currants, some judicious remarks by Mr. Tomlinson, in the *Midland Florist*, directly bear :—

"I have for years been an extensive cultivator of currants, selling the produce in the large town in my immediate neighbourhood, and I find, that though the red grape is a large and fleshy fruit, still it ripens unkindly, which is a great drawback to its more extended cultivation. The old long-bunched red is, with me, far preferable ; but I see no earthly reason why this fruit might not be improved in a very great degree. Would it not be possible to raise a '*currant show*,' on the principle of the Lancashire gooseberry shows ? and if this could be carried out, and an inducement given to raise fresh varieties from seed, I make no doubt that we should speedily have currants double the present size, and much longer in the bunch ; and I am sure that nothing would pay better than improved varieties of both black and white, as well as red ones. The plant comes early into bearing, and any improvement on the old sorts would speedily supersede them, as the black Naples is now displacing the black grape. I heard of several new sorts, which I purchased last autumn, and am now growing them, to test their respective qualities. Of course I cannot, the first season, decide, as I should wish to have my plants well established. The sorts purchased are :—

"1. *The Gondouin Red.*—A continental variety, with peculiarly red wood and large foliage, very distinct in habit.

"2. *The Cherry Red.*—Also from the continent. This has extremely large foliage, and stout shoots.

"3. *May's Victoria.*—This, I see, has been mentioned in several publications as a large and very prolific variety, and would, doubtless, be a fine sort to save seed from.

"4. *Haughton Castle* (Red).—This was raised in the far north of England. Its character to me was *large and late.* It appears to be an erect grower, and has abundance of fruit, which is of good flavour, though, from the circumstance of the trees being planted only last autumn, not so large as when they become established.

"5. *Goliath.*—I have also received with this a first-rate character as a *good* red currant ; and if any induction is to be made from its luxuriant mode of growth, I should fancy it would respond to its name.

"I have selected some of the largest berries on both Goliath and May's Victoria, the seeds of which I intend to sow ; and should these prove large, I will again sow from the largest. By this means, in a series of years, I hope to arrive at the height of my ambition, namely, to produce currants as large as small marbles. Now I am confident there is nothing Utopian in all this ; and I am certain that if a few persevering individuals were to devote their attention to the improvement of the currant, it would be attained in less than ten years."

In these and many other ways might even the best of our present varieties be improved ; and we know of nothing which might be attempted with less effort and a greater prospect of success. If gardeners would turn their attention to the matter, we should soon have to witness the results. Many persons are deterred from experiments of this kind, under the impression that it is a work of magnitude. This is to a great extent erroneous. The idea has indeed gone forth, and seems to be widely dispersed, that the percentage of improvement among seedling plants is infinitesimally small, and that a very large number must be grown to offer even a remote chance of success ; but this idea, doubtless, owes its origin to the too common practice of saving seeds promiscuously, without regard to impregnation. From such a progeny little indeed may be expected : it is a waste of time and labour to act thus, with the view of originating improved varieties of any kind of plant ; and one carefully fertilized seed is worth a hundred so obtained. If, however, the thing be attempted on principle it becomes an easy task, and not only is the labour lightened, but the chances of a satisfactory result are at the same time greatly increased. Suppose one hundred gardeners were each to fertilize one strawberry blossom, according to their own ideas of what blending of varieties would constitute an improvement ; the trouble of doing so would be so trifling as not to be worthy of mention, while it is probable that even the first results would be important. But in these matters we must not be satisfied with first results ; a second or third cross of the hybrid with the male parent (if the latter were well chosen) would most likely—as it has done before—result in considerable farther improvement.

The practice under consideration may, however, be perverted. The perversion we refer to, is that of naming and distributing seedling fruits that in reality do not possess any property superior to those of older and well known kinds. This must always be deprecated. If those who raise seedling fruits, do not really know their worth, they should submit them to some competent judge. The probability of varieties, perhaps good in themselves, but not better than older and well known kinds, being passed off as possessing superior properties, is so great, that every raiser of seedling fruits would do well to set his face so far against the practice, as to chance to err slightly on the other side, rather than uselessly encumber the fruit lists with the names of varieties which, at the highest estimate that can be put on them, are no better than we already possess. In cases where varieties are obtained that really do possess superior, though very slightly improved properties, it would be better to retain such varieties as breeders, than to propagate and distribute them for general cultivation. The possessor of such improved varieties would have a direct advantage over others not so circumstanced, as regards the additional improvement to be looked for in the succeeding races; and we contend, that it would be better for all parties if this course were followed, and the horticultural world not troubled with the results until something really good and distinct were obtained.

Experiments of this kind are the better for being conducted on a limited scale. One case of cross-breeding, carefully wrought out, on correct principles, is more pregnant with really useful and valuable results, than a thousand promiscuous ones, or a hundred carelessly prosecuted; while, of course, the labour and trouble attending the experiments become lessened a hundred, or a thousand-fold. Those, too, who have time and opportunity for more extensive operations, should take care to multiply carefully—instead of carelessly—conducted experiments.

BOTANICAL TERMS,

CHIEFLY APPLIED TO FIGURE, AND THE DIVISION OF PARTS.

Abnormal (*abnormis*); applied where some departure occurs from the ordinary structure.

Accisus; terminated by an acute incision or sinus between two rounded angles.

Acetabuliform (*acetabuliformis*); concave, depressed, round, with a border a little turned inwards, as in the fruit of some kinds of lichens.

Acinaciform (*acinaciformis*); scimetar-shaped; curved, fleshy, with the convex border thin, as in some leaves.

Acuminate (*acuminatum*); pointed, ending very gradually in a tapering or awl-shaped point, as in most of the grasses.

Acuminose (*acuminosus*); terminating gradually in a flat narrow end.

Acutangular; forming a sharp angle.

Acute (*acutum*); sharp, ending in an acute angle; that is, terminating at once in a point, neither abruptly nor tapering; this term is exemplified in lanceolate leaves generally.

Alate (*alatus*); winged, that is, having a thin broad margin.

Ambitus; the outline of any body, the figure represented by its margin.

Anatomicum; dissected, laciniated.

Anceps; two-edged, that is, compressed, with two sharp edges, as in the stem of an iris.

Angular, (*angulatus*, *angulosus*); furnished with projecting longitudinal angles; it is called obtuse-angled when they are blunt or roundish, and acute-angled if they are sharp.

Apex; the tip or point of any body.

Apiculate (*apiculus*); pointletted, that is, terminating abruptly in a little point, and differing from *mucronate*, in the pointlet being part of the limb, and not arising wholly from a *costa* or *rib*.

Apterous; without the membranaceous margin, to which botanists apply the term wing; wingless.

Aquilinus; having the figure of an eagle: applied to a section of the stem of some ferns.

Araniferus; having the figure of a spider, as in what is called the spider orchis.

Arcuate (*arcuatus*); curved, bent so as to represent the arc of a circle, as in the fruit of *Medicago falcata.*

Arietinum; resembling a ram's head.

Aristate (*aristatus*); awned, abruptly terminated by a hard, straight, awl-shaped point, as in the palea or scales of the flowers of grasses.

Armillaris; formed like a bracelet.

Arthriticus; gouty, swollen, puffed out.

Arundinaceus; having the appearance or character of a reed.

Aspergilliform (*aspergilliformis*); a kind of brush shape, resembling that used for sprinkling holy water in the ceremonies of the Romish church; the stigmas of many grasses are of this form.

Asterias; stellate, having the figure of a star

Attenuate (*attenuatus*); diminishing very gradually in breadth, tapering.

Beaked (*proboscideus*); terminating in a hard horny point, as in the fruit of *Martynia*, and other plants.

Biceps; a compound word signifying two heads; the prefix is varied, thus *triceps* means having three heads, and so on.

Bicornis; two-horned; *tricornis* is three-horned, and so on.

Bidentate (*bidentatus*); furnished with two teeth-like lobes; this is different from what is termed double-toothed, which is *duplicato-dentate.*

Bifid (*bifidus*); two-cleft or divided; three-cleft is expressed by *trifidus*, four cleft by *quadrifidus*, and so on; for the sake of brevity these words are often written thus:—2-fid, 3-fid, 4-fid, and so on.

Bilobed (*bilobus*); two-lobed; by an alteration of the prefix any number of lobes may be expressed; thus *triloba* is three-lobed, *quinqueloba* five-lobed, and so on.

Blattarius; resembling, or having the appearance of a moth.

Botuliform (*botuliformis*); sausage-shaped, long, cylindrical, hollow, incurved at each end.

Byssaceous (*byssaceus*); divided into very fine segments, like wool, as the spawn of mushrooms.

Calamiform (*calamiformis*); formed like a reed or quill, similar to *terete.*

Calcarate (*calcaratus*); furnished with a spur or projection; the petals of flowers are sometimes spurred, as in the toad-flax, or some of the orchises.

Calceiform (*calceiformis*); formed like a shoe or slipper.

Calyciform (*calyciformis*); of the form or shape of a calyx.

Canaliculate (*canaliculatus*); channelled, grooved, long, and concave, so as to resemble a gutter or channel; many leaves are channelled.

Cancellate (*cancellatus*); this term is applied when the parenchyma, or cellular (pulpy) substance usually present in leaves is absent, and the veins or ribs only are present, anastomosing (that is uniting where they come in contact), and forming a kind of net-work, as in the case of *Hydrogeton fenestralis.*

Capillary (*capillaris*); hair-shaped, that is delicate and slender, resembling a hair; it expresses a more delicate degree of the same condition as *filiform;* the filaments of most plants are capillary.

Capitate (*capitatus*); headed, applied chiefly to cylindrical or terete bodies which suddenly become thickened at the point.

Capreolate (*capreolatus*); tendrilled, furnished with tendrils.

Carinate (*carinatus*); keeled, formed like the keel of a boat, as the lower segment of papilionaceous flowers.

Caudate (*caudatus*); tail-shaped, very much acuminated, so as to form a long weak point, like the tail of an animal; the calyx of *Aristolochia trilobata* is of this form.

Channelled (*canaliculatus*); long and hollow, so as to resemble a channel or gutter; many leaves are channelled.

Circinate, (*circinatus, circinalis*); rolled up spirally, bent or curled round like the head of a crosier, as the young fronds of many ferns.

Circumscriptio; the same as *ambitus.*

Cirrhous (*cirrhosus*); terminated by a spiral or flexuose filiform appendage, (a tendril,) as in the leaf of *Adlumia cirrhosa,* the *Gloriosa superba,* &c.

Clathrate (*clathratus*); latticed, divided like lattice-work.

Clavate (*clavatus*); club-shaped, gradually thickening upwards from a very taper base; *claviform* has the same meaning.

Cleft (*fissus*); split, divided nearly to the base into a determinate number of segments; thus we have *bifid* two-cleft, *trifid* three-cleft, and so on; where the divisions are very numerous the object is called *multifid,* or many-cleft.

Clypeate (*clypeatus*); shield-shaped, having the form of an ancient buckler; it has the same meaning as *scrutate.*

Cochleate (*cochleatus*); twisted in a short spire, so as to resemble the convolutions of the shell of a snail, as in the pod of *Medicago cochleata.*

Complanate (*complanatus*); same as *compressed;* flattened, made even.

Compound (*compositus*); having divisions or ramifications; as applied to the foliage of plants this includes all the numerous varieties of pinnate and other divided leaves which are articulated.

Compressed (*compressus*); flattened lengthwise, as in the pod of the French bean.

Conical (*conicus*); having the figure of a true cone, as in the prickles of some Roses.

Conoidal (*conoideus*); resembling a cone, but not truly conical.

Conopseum; resembling, or having the appearance of a gnat.

Corniculate (*corniculatus*); twined, terminating in a point resembling a horn.

Cornute, (*cornutus, corniculatus*); horned, that is, terminating in a rigid process resembling a horn; if there are two it is called *bicornis,* if three *tricornis,* and so on.

Crateriform (*crateriformis*); goblet-shaped, hemispherical, and concave; a little contracted at the base.

Crenate (*crenatus*); having convex or rounded teeth-like projections; applied chiefly to the margins of leaves.

Crenelled; the same as *crenated.*

Cristate (*cristatus*); crested, that is, having an irregular elevated or notched ridge, resembling the crest of a helmet.

Cubical (*cubicus*); approaching in form to that of a cube; this is rarely met with, and is chiefly found in seeds, as in those of *Vicia lathyroides.*

Cucullate (*cucullatus*); same as *hooded.*

Cultrate (*cultratus*); formed like a pruning knife; same as *cultriform.*

Cuneate (*cuneatus, cuneiformis*); wedge-shaped, inversely triangular, with the corners rounded.

Cupuliform (*cupuliformis*); cupola-shaped, slightly concave, with a nearly entire margin, as in the cup of the acorn.

Curled (*crispus*); having the margin excessively and irregularly divided and twisted, as in the curled parsley, curled kale, curled endive, &c.

Curved (*curvatus*); the same as *arcuate*.

Cuspidate (*cuspidatus*); abruptly acuminate; tapering gradually into a rigid point.

Cylindrical (*cylindricus*); having a cylindrical figure, as in the stems of grasses, and the greater number of monocotyledonous plants, palms, &c.

Cymbiform (*cymbiformis*); boat-shaped, same as *navicular*.

Decompound (*decompositus*); having compound divisions or ramifications, that is, when the divisions are themselves divided.

Deliquescent (*deliquescens*); disappearing, branched, but in such a way that the principal axis is lost sight of in the ramifications, as in the head of the oak.

Dendroid (*dendroides*); tree-like, applied to small plants when their tiny branches resemble the head of a tree, as in some mosses and Lycopodiums.

Dentate (*dentatus*); toothed, having sharp teeth with concave edges; doubly-toothed, that is, when the teeth are themselves toothed, is expressed by *duplicato-dentate*.

Depressed (*depressus*); flattened vertically, as in the root of the turnip.

Dichotomous (*dichotomus*); applied to that particular form of branching when the divisions are always in pairs; if the branches come in threes it is called *trichotomous*.

Difform (*difformis*); this term is used to express irregularity.

Digitate (*digitatus*); fingered; differs from palmate in having the segments narrower, and less divergent.

Dimidiate (*dimidiatus*); halved, only half or partially formed.

Dipterous; two-winged, that is, having two thin broad margins; *pterus* means winged, *dipterus*, *tripterus*, *tetrapterus*, &c. two, three, and four-winged.

Discoidal (*discoideus*); orbicular, with some perceptible thickness, parallel faces, and a rounded border as in the fruit of *Strychnos Nux-vomica*; also dilated, so as to be compared to a disk.

Disomorphous; two-formed, when the same class of organs is of two distinct shapes.

Dolabriform (*dolabriformis*); axe-shaped, that is, nearly straight, fleshy, somewhat terete at the base, and compressed at the upper end, with a straight thick border, the other border being convex, considerably enlarged, and thin, as in *Acacia dolabriformis*.

Edentate (*edentatus*); without teeth, that is, plain-edged: *e* prefixed to a word negatives its meaning, thus *edentate* is without teeth, whilst *dentate* signifies toothed.

Ellipsoidal (*ellipsoideus*); having an elliptical figure; applied to a solid.

Emarginate (*emarginatus*); having a little notch at the end, as if a piece had been taken out, as in the leaf of the common box-tree.

Entire (*integer*); without marginal division or indentation of any kind; *integerrimus* means absolutely free from indentation.

Epistomeres; spigot-shaped.

Equal (*æqualis*); applied when the two sides of a figure are symmetrical, or when all the parts correspond in size and form; this term or its opposite is a good deal used in describing plants.

Equestris; having a fancied resemblance to a horse's head, as the flowers of *Amaryllis*, or *Hippeastrum equestris*.

Equilateral (*æquilaterus*); having equal or corresponding sides; the same as *equal*.

Erose (*erosus*); gnawed, having an irregularly toothed edge, as if gnawed or bitten.

Excisa; bluntly cut off.

Falcate (*falcatus*); sickle-shaped, plane and curved to any degree, with parallel edges.

Fenestrate (*fenestratus*); windowed, having open spaces like windows; some leaves have such spaces.

Fibuliform (*fibuliformis*); button-shaped.

Filamentose (*filamentosus*); thread-like, formed of, or furnished with thread-like bodies.

Filiform (*filiformis*); thread-shaped; slender like a thread, but less delicate than capillary.

Fimbriate (*fimbriatus*); fringed, margined by thread-like processes thicker than hairs, as the flowers of *Cucubalus fimbriatus*.

Fistulous (*fistulosus*); applied to bodies which are terete, hollow, and closed at each end, as in the leaves of the onion; it is also applied to stems when they are hollow and pipe-like.

Flabelliform (*flabelliformis*); fan-shaped, plaited or folded like the rays of a fan, as in the leaves of many palms.

Flagelliform (*flagelliformis*); whip-shaped, applied to stems and roots which are long, taper, and supple; the well-known creeping Cereus (*C. flagelliformis*) is an example.

Foliaceous; leaf-like, having the texture and form of a leaf, as in the lobes of the calyx of a rose.

Forficate (*forficatus*); pincer or nipper-shaped.

Fornicate (*fornicatus*); vaulted or arched, having the appearance or figure of an arch.

Funale (*funalis*); rope-shaped, formed of coarse fibres resembling cords, as the roots of many arborescent monocotyledonous plants.

Furcate (*furcatus*); forked, having long terminal lobes like the prongs of a fork.

Galeate (*galeatus*); helmeted, applied chiefly to ringent or gaping flowers, where the upper lip is hollowed out, or helmet-shaped; this part when so formed being called a *galea*.

Galericulate (*galericulatus*); furnished with a tuft or plume.

Geniculate (*geniculatus*); knee-jointed, bent abruptly like a knee; the stems of many grasses are knee-jointed.

Gibbous (*gibbosus*); tumid or swollen, projecting, very convex, as in the leaves of many succulent plants; this term is properly restricted to solid convexities.

Globose (*globosus, sphæricus*); having nearly the figure of a true globe or sphere, as in many seeds; *globulose* has the same signification.

Gongyloides; knob-like, having an irregular roundish figure.

Grumous (*grumosus*); having the form of little clustered grains.

Hamose (*hamosus*); bent in the form of a hook; same as *hooked.*

Hebetate (*hebetatus*); blunt, having a soft obtuse termination.

Hians; gaping, opening with a widely spreading orifice.

Hooded (*cucullatus*); when the apex or sides of a plane body are curved inwards, so as to resemble a hood; the leaves of *Pelargonium cucullatum* are of this form.

Incised (*incisus*); cut, divided by regular incisions.

Inflated (*inflatus*); bladdery, thin membranous, and swelling equally, as if puffed out with air.

Irregular (*irregularis*); this term is applied when the regularity of the parts is broken up by inequalities: the pansy is an irregular flower, because all the parts are not alike in form.

Lacerated (*lacerus*); torn, irregularly divided by deep incisions.

Lachrymæform (*lachrymæformis*); tear-shaped; this differs from *pear-shaped*, in not having its sides contracted; the seed of the apple is an example.

Laciniate (*laciniatus*); slashed, divided by deep taper-pointed incisions: when these incisions are divided by others at right angles, the plant is called *squarroso-laciniatus*.

Lamellar (*lamellatus*); plated, having two little plates at the apex, as the style of some plants.

Lenticular (*lenticularis*); lens-shaped, resembling a double convex lens, as in the seeds of *Amaranthus.*

Linguiform (*linguiformis*); tongue-shaped, long, fleshy, plano-convex, and obtuse, as in the leaves of many aloes.

Lobate (*lobatus*); lobed, partly divided by a determinate number of segments; thus *bilobate* is two-lobed, *tribolate* three-lobed, and so on.

Loculose (*loculosus, septatus, phragmiger*); partitioned. divided by internal partitions into cells, as the pith of the plant which produces the rice-paper of the Chinese. This term is never applied to fruits.

Longicornu; long-spurred, or long-horned.

Mammæform (*mammæformis*); teat-like, nipple-formed.

Meniscoid (*meniscoideus*); like *patelliform*, but thinner in substance.

Modioliform (*modioliformis*); nave-shaped, hollow, round, depressed, with a narrow orifice.

Molendinaceus; mill-sail-shaped, that is, having many longitudinal wings projecting from a convex surface, as in the seeds of some Umbelliferous plants.

Moniliform (*moniliformis*); necklace-shaped, that is, terete or cylindrical, and contracted at regular intervals, so as to resemble a string of beads; some seed-pods and some stems are of this form.

Mucronate (*mucronatus*); terminated abruptly by a rigid short point, as in the leaf of *Statice mucronata.*

Multicuspis; many-pointed, having numerous rigid points.

Muscariform (*muscariformis*); brush-shaped, formed like a brush or broom, that is, furnished with long hairs towards one end of a slender body.

Muscifera; resembling a fly; the fly orchis is an example.

Mutic (*muticus*); pointless; applied in contrast with some other terms signifying pointed; a term of contrast.

Napiform (*napiformis*); turnip-shaped, having the figure of a depressed sphere.

Nasutus; having a fancied resemblance to the figure of a nose.

Navicular (*navicularis*); boat-shaped, that is, of the figure of a boat; concave, tapering to each end, with a keel externally; the glumes of the canary grass are of this form, which is hardly different from *keeled.*

Nodose (*nodosus*); nearly the same as *moniliform*, having many *nodi* or *knots.*

Normal (*normalis*); applied when the ordinary structure is not deviated from.

Obbate (*obbatus*); shaped like a bottle or flagon.

Obconical (*obconicus*); inversely cone-shaped.

Obcordate (*obcordatus*); inversely heart-shaped.

Obovate (*obovatus*); inversely egg-shaped.

Obtuse (*obtusus*); blunt, terminated by a rounded end.

Ovoidal (*ovoideus*); having an ovate or egg-shaped figure; applied to a solid.

Parted (*partitus*); divided into a determinate number of lobes, which extend nearly to the base of the segment to which they belong: *bipartitus* is two-parted, *tripartitus* three-parted, and so on.

Patelliform (*patelliformis*); kneepan-shaped, broad, round, thick, convex on the lower surface, concave on the other: it is the same as *meniscoid*, but thicker.

Pectinate (*pectinatus*); comb-shaped, with numerous close narrow segments, like the teeth of a comb.

Pertuse (*pertusus*); perforated, or having irregular open spaces, so as to appear pierced with holes, as in some kinds of leaves.

Petaloid (*petaloideus*); petal-like, having the colour and texture of a petal: often applied to bracts.

Piliferus; hair-pointed, differs from setose chiefly in having a weak instead of sharp point; it occurs in many mosses.

Placentiform (*placentiformis*); placenta-shaped, that is, thick, round, and concave, both on the upper and lower surface, as in the root of the *Cyclamen.*

Plane (*planus*); a perfectly even and flat surface, which occurs in many leaves.

Prægnans; swollen, protuberant.

Præmorse (*præmorsus*); bitten, differs from truncate in the termination being ragged and irregular; the leaf of *Caryota urens* is an example.

Prismatical (*prismaticus*); prism-shaped, that is, having several longitudinal angles, with intermediate flat faces, as in the calyx of *Frankenia pulverulenta.*

Pterus; the term used in composition for winged; thus, *dipterus*, two-winged; *tripterus*, three-winged; and so on. *Epipterus* is applied when the wing terminates, and *peripterus* when it surrounds anything.

Pulvinate (*pulvinatus*); cushion-shaped, convex and rather flattened.

Pungent (*pungens*); sharp, terminating gradually in a hard sharp point, as in the leaves of many plants.

Pyriform (*pyriformis*); pear-shaped, differing from turbinate in being a more elongated figure; this form is exemplified in many pears.

Pyxidate (*pyxidatus*); shaped like a box.

Quaternate; in fours; applied when four leaflets spring from the same point.

Quinate; in fives; applied when five leaflets spring from the same point.

Ramose (*ramosus*); branched, having many divisions; if they are small, the term *ramulosus* is used; if the tendency is but slight, *sub-ramosus;* if in a very great degree, the term *ramosissimus* is employed.

Regular (*regularis*); when all the corresponding parts—that is to say, all the petals of a flower, for instance—are symmetrical; the buttercup is a regular flower.

Repand (*repandus*); having an uneven outline or margin, with slight concavities and convexities, as observed in some leaves.

Retuse (*retusus*); terminating in a round end, the centre of which is depressed, as in the leaf of *Vaccinium Vitis-idæa.*

Rimose (*rimosus*); chinky, having a longitudinal fissure or fissures.

Ruminate (*ruminatus*); applied to hard bodies pierced in various directions by narrow cavities filled with dry cellular matter, as in the albumen of the nutmeg.

Rostrate (*rostratus, rostellatus*); beaked, terminating gradually in a hard long straight point, as in the seed-pod of a radish: the term mostly applies to some elongation of the seed-vessel.

Saccate (*saccatus*); pouch-shaped.

Scrotiform (*scrotiformis*); pouch-shaped, hollow, and resembling a double bag.

Scutate (*scutatus, scutiformis*); buckler-shaped, having the figure of a small round buckler; lens-shaped with an inverted rim.

Scutelliform (*scutelliformis*); differs from patelliform in being of an oval figure, not round.

Sellæform (*sellæformis*); saddle-shaped, oblong, with the sides hanging down as the flaps of a saddle.

Semiterete (*semiteres*); half-terete, that is, round on one side, and flat on the other.

Serrate (*serratus*); saw-edged, having sharp straight-edged teeth pointing towards the apex; applied to the margins of leaves: if the serratures are again serrated it is called *biserrate*, or *duplicato-serrate.*

Setose (*setosus, setiger*); bristle-pointed, terminating gradually in a very fine sharp point, as in the leaves of some mosses.

Simple (*simplex*); scarcely divided or branched at all: *simplicissimus* expresses absolute simplicity.

Sinuate (*sinuatus*); having an uneven margin with deep concavities and convexities, as in the leaf of the common oak.

Sinus; the indentation or recess formed when a leaf or other body is divided into lobes.

Spheroidal (*spheroideus*); having a spherical figure a little depressed at each end; applied to a solid body.

Spiral (*spiralis*); lengthened, and twisted like a corkscrew.

Stellate (*stellatus*); divided into segments, radiating from a common centre.

Strombuliform (*strombuliformis*); a lengthened spirally twisted figure, resembling the convolutions of a shell called a strombus; it occurs in some seed-pods.

Succisus; bitten; the same as *præmorse.*

Supradecompound (*supradecompositus*); having several series of divisions or ramifications, that is, when the primary divisions are divided, and these again divided, and so on; it is chiefly applied to leaves.

Taper (*teres*); employed in contradistinction to angular, when speaking of lengthened bodies, as the stems of plants.

Tænianus; tapeworm-shaped, that is, long, cylindrical, and contracted in various parts.

Terete (*teres*); round, the opposite of angular, as applied to lengthened bodies, as the stems of plants.

Testicular (*testiculatus*); having the form of two oblong bodies, as in the roots of *Orchis mascula.*

Torulose (*torulosus*); knotted, very nearly the same as *moniliform,* being cylindrical, but uneven in surface.

Trapeziform (*trapeziformis*); shaped like a trapezium, that is, having four sides, those which are opposite not being parallel, as in *Adiantum trapeziforme.*

Tridentate (*tridentatus*); trident-pointed, terminated by a truncated point with three indentations, as in *Saxifraga tridentata.*

Trigonal (*trigonus*); three-cornered, having three longitudinal angles, with intermediate flat spaces.

Triquetrous (*triqueter*); three-edged, that is, with three acute angles, the intermediate faces being hollow or concave; *triangular* has the same meaning; it is very near *trigonal.*

Trochleate (*trochlearis*); pulley-shaped, circular, compressed, contracted in the centre of its circumference, so as to resemble a pulley, as in the embryo of the seed of *Commelyna communis.*

Truncate (*truncatus*); terminating abruptly, as if cut off, as seen in the leaf of the Tulip-tree, or the *Epiphyllum truncatum.*

Tubæform (*tubæformis, tubatus*); trumpet-shaped, hollow and dilated at one end like a trumpet, as in the corolla of some of the honeysuckles.

Tubular (*tubulosus*); cylindrical, but hollow, as in the calyx of many *Silenes.*

Tumid (*tumidus*); swollen or bulged; same as *turgid.*

Turbinate (*turbinatus*); top-shaped, inversely conical, with a contraction towards the point, as in many pears.

Turgid (*turgidus*); slightly swollen, or puffed out.

Twin (*didymus*); growing in pairs, or divided into two equal parts, as in the fruit of *Galium.*

Umbonate (*umbonatus*); bossed, round, having a protuberant centre, like an ancient shield, as in the *pileus,* or cap, of some mushrooms.

Umbraculiform (*umbraculiformis*); umbrella-shaped, resembling an open umbrella, that is, hemispherical and convex, with rays proceeding from a common centre; this is seen on the top of the seed-vessel of the poppy.

Uncinate (*uncinatus, uncatus*); hooked, curved suddenly back at the point, as in the leaves of *Hypnum uncinatum.*

Varicose (*varicosus*); swollen here and there in an irregular manner.

Vasiform (*vasiformis*); vase-shaped, formed like a flower-pot, resembling an inverted truncate cone.

Vermicular (*vermicularis*); thick and almost cylindrical, but bent in different parts.

Vertebrate (*vertebratus*); a term sometimes applied where a body (generally a leaf) is contracted at intervals, there being an articulation at each contraction, as in *Cussonia spicata.*

Ventricose (*ventricosus*); bellying, swelling unequally on one side, as seen in many monopetalous flowers.

TERMS CHIEFLY APPLIED TO SURFACE AND TEXTURE.

Acanthous; spiny, furnished with spines, as the leaves of some thistles.

Aculeate (*aculeatus*); prickly, furnished with prickles, as the stem of the rose; prickles are distinguished from spines.

Anacanthous; without spines, spineless.

Annulate (*annulatus*); ringed, surrounded by bands either elevated or depressed: the cups of the acorns of several kinds of oak are ringed.

Aphthous; appearing as though covered with little ulcers.

Arachnoid (*arachnoideus*); cobwebbed, covered with loose, thin entangled hairs, like the web of a spider, as in the old-fashioned *Calceolaria arachnoidea.*

Areolate (*areolatus*); divided into a number of small, irregular, angular spaces.

Barbate (*barbatus, crinitus*); bearded, clothed with tufts of long weak hairs growing from different parts of the surface, as in *Zygopetalum crinitum.*

Bituminous; having a clammy or adhesive surface.

Blistered (*ulcerosus*); having the surface covered as if by blisters.

Bullate (*bullatus*); garnished with studs, or small excrescences as in *Helonias bullata.*

Callose; callous, hardened, or indurated.

Carnose (*carnosus*); of a thick fleshy, juicy substance, as in the leaf of *Hoya carnosa.*

Cartilaginous (*cartilagineus*); hard and tough, like the skin of an apple seed.

Caruncle (*caruncula*); a small fleshy protuberance.

Cæsious (*cæsius*); grayish, covered with a fine bloom; like glaucous, but greener.

Cataphracta; clothed in mail, armed.

Cavus; hollow, full of holes or cavities.

Ceraceous (*ceraceus, cereus*); waxy, having the texture and appearance of wax, as the pollen masses of Orchids.

Ciliated (*ciliatus*); having fine hairs, resembling the eyelash, as in the leaves of *Erica Tetralix*.

Clammy; viscid, sticky, as the stems of catch-fly, or *Mimulus glutinosus*.

Corneous (*corneus*); horny, of a hard and close texture, capable of being cut without difficulty, and not being brittle, as the albumen of many plants.

Corticate (*corticatus*); coated, harder on the exterior than in the interior.

Coriaceous (*coriaceus, alutaceus*); leathery, thick and tough like leather, as in the leaves of the common laurel and camellia.

Crustaceous (*crustaceus*); hard, thin and brittle, as the coat of the seed of asparagus.

Crystalline; having the appearance of crystals.

Dealbate (*dealbatus*); whitened, clothed with an opaque whitish powdery substance, more dense than when *pulverulent*.

Dewy (*roridus*); covered with little transparent elevations, having the appearance of fine drops of dew.

Diaphanous; transparent.

Disermis; smooth, without thorns.

Duriuscula; rather hard or rigid.

Echinate (*echinatus*); bristly, furnished with numerous rigid hairs or straight prickles, as in the fruit of the sweet chestnut.

Embossed (*cælatus*); carved, projecting from the surface like the boss of a shield or target.

Erinus; prickly, rough.

Even (*æquatus*); the reverse of anything expressive of inequality of surface.

Farinaceous (*farinaceus*); mealy, having the texture of flour in a mass, as the albumen of wheat.

Farinose (*farinosus*); mealy, covered with a whitish scurfy substance, as in the leaves of *Primula farinosa*.

Favose (*favosus, alveolatus*); honeycombed, pitted or hollowed out in the manner of a section of a honey-comb, as in the seeds of the poppy.

Firm; hardish, tending to solidity.

Floccose (*floccosus*); clothed with dense hairs, which fall away in small tufts, as in some kinds of *Verbascum*.

Foveate (*foveatus*); pitted, full of little pits or hollows; the same as *scrobiculate*.

Gelatinous (*gelatinosus*); having the texture and appearance of jelly, as in *Ulva*.

Glabrous (*glaber, lævis*); smooth, destitute of hairiness or unevenness, as in many leaves.

Glandular (*glandulosus*); covered with hairs bearing glands on their tips, as in the fruit of some roses.

Glaucous (*glaucus*); clothed with a fine bloom, giving a bluish cast to the surface it covers, as in the leaf of the cabbage.

Glochidate (*glochidatus*); clothed with a peculiar form of hair which is split and hooked.

Glutinose (*glutinosus*); covered with a viscid or glutinous exudation, as the leaves and stems of *Mimulus glutinosus*.

Grooved (*sulcatus*); furrowed, channelled, marked with grooves or channels.

Herbaceous (*herbaceus*); thin, green and cellular, of the texture observed in the leaves of mosses.

Hirsute (*hirsutus*); rough, hairy, clothed with hairs longer and more rigid than down.

Hispid (*hispidus*); covered with long rigid hairs, as the flowers of *Pimelia hispida*.

Hoary (*incanus*); densely covered with very short hairs, giving a whitish appearance to the surface from whence they proceed, as in some kinds of stock, and the leaves and stem of *Pimelia incana*.

Homogeneous; of uniform composition or substance.

Hyaline (*hyalinus*); having the appearance of crystals, transparent, glassy.

Hystrix; bristly, like a porcupine.

Iced (*glacialis*); covered with shiny particles like icicles, having a frosted appearance.

Imberbis; smooth, without a beard; used in descriptions when any allied kinds have some parts bearded.

Induviate (*induviatus*); covered with the withered remains of leaves, which being inarticulate with the stem, do not fall off.

Inermis; smooth, unarmed, destitute of spines and prickles; used to distinguish between such kinds as are furnished with spines or prickles, and such as are not.

Jubate (*jubatus*); crested, furnished with a crest or mane.

Lacunose (*lacunosus*); furnished with numerous large deep excavations or depressions.

Lævigate (*lævigatus, politus*); polished, having the appearance of a polished surface, as in many seeds.

Lanate (*lanatus*); woolly, covered with long dense curled matted hairs resembling wool, as in *Verbascum Thapsus*.

Lax (*laxus*); loose, of a soft cellular texture, appearing as if not in a state of cohesion, as the pith of most plants.

Lentiginose (*lentiginosus*); dusty, covered with minute dots, as if dusted.

Lepidote (*lepidotus, leprosus*); leprous, clothed with lacerated peltate scales, as in the leaves of *Eleagnus*.

Ligneous (*lignosus, lignus*); of the texture and substance of wood.

Lineate (*lineatus*); lined, the same as *striated*.

Loreus; leathery, the same as *coriaceous*.

Lucid (*lucidus*); shining, glittering, as in many leaves.

Manicate (*manicatus*); clothed with hairs interwoven into a thick mass easily separated from the surface, as in *Cacalia canescens.*

Medullary (*medullosus*); pithy, filled with spongy pith.

Membranaceous (*membranaceus*); semi-transparent and thin in texture, like a fine membrane, as in the leaves of mosses.

Mucous (*mucosus*); slimy, covered with slime, or with a coat that is soluble in water and becomes slimy.

Muricated (*muricatus*); furnished with numerous excrescences, like the fruit of *Arbutus Unedo.*

Naked (*nudus, denudatus*); substantially the same as *glaber;* it is used to distinguish such surfaces as are not clothed with hair, down, &c.

Oleaginous (*oleaginosus*); fleshy in substance, but filled with oil.

Opaque (*opacus*); dull-looking, used to distinguish such surfaces as are the reverse of shining.

Osseous (*osseus*); bony, hard, and very close in texture, and not cut without difficulty, the parts being brittle, as the stone of a peach.

Paleaceous (*paleaceus*); chaffy, clothed with small weak membranous scales, resembling the paleæ of grasses; the receptacle of many compound plants is paleaceous.

Papillose (*papillosus, papulosus*); pimpled, covered with minute, rather soft, excrescences or tubercles of uneven size, as in the leaves of *Mesembryanthemum crystallinum.*

Papyraceous (*papyraceus, chartaceus*); papery, opaque, and having the consistence of paper, as in most leaves.

Plumose (*plumosus*); feathery, consisting of long hairs, which are themselves hairy, as in the beard of the feather-grass.

Pruinose (*pruinosus*); frosted, applied to surfaces covered with small dew-like transparent elevations, which look as though they were congealed, as in the leaves of *Rosa pruinosa.*

Pilose (*pilosus*); hairy, covered with weak, short, thin hairs, as the leaf of the carrot.

Pubescent (*pubescens, pubens*); downy, densely covered with short weak hairs; it is to be observed in many leaves.

Pulverulent (*pulverulentus*); powdery, covered with a fine bloom; similar to farinose.

Punctate (*punctatus*); dotted, covered with minute impressions, as if made by the point of a pin, as in the seed of the common pimpernel.

Pustulate (*pustulatus*); covered with glandular or blistery excrescences.

Ramentaceous (*ramentaceus*); clothed with thin, shrivelled, scale-like bodies, as the stems of many ferns.

Reticulate (*reticulatus*); netted, covered with lines like net-work, which project a little from the surface, as the veins of many leaves. When of several layers the outer only is netted, as in the case of the roots of *Gladiolus communis,* it is called *semireticulate.* The beautiful gold-coloured network on the leaves of *Anœctochilus setaceus* is a very elegant example of reticulation.

Rigid; stiff, untractable; the opposite of flexible.

Rough (*asper*); clothed with rough, rigid points, as the leaves of the borage.

Rugose (*rugosus*); coarsely wrinkled, covered with reticulated or net-like lines, the spaces between which are convex, as in the leaves of sage, *Calceolaria rugosa,* and other plants; *rugulose* is more finely wrinkled.

Scabrous (*scaber*); rough, covered with minute warts, or hard short rigid points, as in the leaves of the borage; roughness in a less degree is termed roughish (*scabridus*).

Scarious (*scariosus*); having a thin, dry, shrivelled appearance.

Scarred (*cicatrisatus*); marked by scars left by bodies that have fallen; thus the stem is scarred where the leaves have fallen, and in some stems this is very obvious.

Scrobiculate (*scrobiculatus*); pitted, full of small shallow depressions or excavations.

Scurfy (*furfurosus*); covered with small, roundish, flattened particles, which give a leprous appearance to the surface, as in some varieties of pine-apple.

Shining (*nitidus*); having a smooth, polished surface; similar to *lucid.*

Silky (*sericeus*); clothed with fine soft close-pressed hairs, which are silky to the touch, as in the leaves of *Protea argentea.*

Spiculate (*spiculatus*); covered with fine fleshy erect points.

Spinose (*spinosus*); furnished with spines, as the branches of the hawthorn and the wild plum. Spines it will be remembered are different from prickles.

Splendent (*splendens*); glittering, differing from lævigated in having the polished surface broken by very slight irregularities.

Spongy (*spongiosus*); loosely cellular, the cellules filled with air, having the texture of a sponge.

Squamose (*squamosus*); scaly, clothed with minute scales fixed by one end, as on the shoots of the pine tribe.

Striated (*striatus*); marked by fine longitudinal lines or streaks, as many stems.

Strigose (*strigosus*); clothed with sharp appressed rigid hairs.

Stinging (*urens*); covered with sharp pointed hairs, which when touched emit an irritating fluid, as in the common stinging nettles, and the *Loasas.*

Strumose (*strumosus*); swollen, protuberant.

Stupose (*stuposus*); filamentous, bearded, as in the filaments of *Anthericum*.

Suberose (*suberosus*); corky, having the texture of cork, as the bark of *Ulmus suberosa*.

Succulent (*succulentus*); very cellular and juicy, as the cactus, the aloe, and similar plants.

Sulcate (*sulcatus*); furrowed, marked by longitudinal channels, as the stem of the parsnip.

Tartareous (*tartareus*); rough, crumbling on the surface, like the thallus of some lichens.

Thick (*crassus*); applied to such substances as are thicker than ordinary; thus fleshy leaves are thick, the texture of leaves generally being papery.

Tomentose (*tomentosus*); covered with dense short hairs somewhat rigid, so as to be sensibly perceptible to the touch, as in *Lavatera arborea*.

Unctuous (*unctuosus*); greasy, having a surface which though not actually greasy, yet feels to be so, as in some leaves.

Velvety (*velutinus*); similar to *tomentose*, but with the hairiness rather more dense, so as to resemble velvet.

Verrucose (*verrucosus, tuberculatus*); warted, tuberculated, clothed with small excrescences, as the leaves of some aloes.

Villose (*villosus, hirsutus*); shaggy, clothed with long soft hairs, as in *Epilobium hirsutum*.

TERMS CHIEFLY APPLIED TO EXPRESS SIZE, DURATION, OR THE HABITAT OF PLANTS.

Annotinus; yearly, that which has the growth of a year.

Annual (*annuus*); see *monocarpous*.

Aquatic (*aquaticus*); growing in water; used to distinguish such from plants which grow on land: *sub-aquatics* are plants growing in very wet or marshy places.

Arenareous (*arenarius*); growing in or amongst sand; used chiefly in reference to plants growing on sandy shores, as *Gnaphalium arenarium*.

Arvensis; growing in corn-fields, as *Anagallis arvensis* and *Ranunculus arvensis*.

Biduus; enduring two days.

Biennial (*biennis*); see *monocarpous*.

Biferus; double-bearing; applied when any part is produced twice in a season.

Bimestris; enduring for two months.

Brachialis, ulnaris; twenty-four inches long, the length of an ell, or of the arm.

Caducous (*caducus*); falling off early; the calyx of the poppy falls off at a very early stage, and this is caducous.

Capillaris; of the breadth of a hair, the twelfth part of a line.

Caulocarpous; see *polycarpous*.

Cubitalis; seventeen inches long; the length of a cubit, or the distance between the elbow and tip of the finger.

Debile (*debilis*); of weak and feeble construction, slender.

Deciduous (*deciduus*); falling off finally, not persistent, as the leaves of most trees—the elm for example.

Depressed (*depressus*); broad and dwarf, as if growing horizontally instead of perpendicularly.

Diurnus, ephemeris; of a day, enduring but a day, as the flowers of *Tigridia*; *biduus* means enduring for two days; *triduus*, three days, and so on.

Dodrantalis; nine inches long; the length of a span, or space between the thumb and little finger, separated widely.

Elate (*elatus, procerus*); tall and slender; applied to plants which seem higher than accords with their other proportions.

Ephemeris; of a day, enduring but a day, as the flowers of *Tigridia*.

Evanescent; of very short duration, vanishing quickly.

Evergreen; usually applied to such trees and shrubs as retain their leaves from year to year, never being denuded, to distinguish them from deciduous trees, which shed their leaves in autumn; the box-tree and the laurel are evergreens.

Exiguus; little, small in all parts, but well proportioned.

Fugacious (*fugax*); perishing, or falling off quickly after arriving at perfection, as the petals of the *Cistus* family, and many fungi.

Gigantic (*giganteus*); tall, but at the same time stout and well proportioned.

Horarius; of an hour, enduring but an hour or two, as the flowers of *Cistus*.

Hornus; of the same year, not a year old.

Humilis; low, in a comparative sense, being chiefly applied to objects not remarkably small in themselves, but becoming so in comparison with kindred larger forms.

Hysteranthous; applied when the leaves appear after the flowers, as in the mezereum and the coltsfoot.

Lacustrine; of, or belonging to, a lake; applied to plants which grow in lakes, as *Scirpus lacustris*.

Limose (*limosus*); growing in the mud, as *Equisetum limosum*.

Linealis; of the length of a line, the twelfth part of an inch.

Littorale (*littoralis*); growing on the shore, as *Lupinus littoralis*.

Lofty (*exaltatus*); tall, but in a much greater degree than is expressed by *elatus*, and less slender.

Marcescent (*marcescens*); withering, fading, not falling off until the part that bears it is perfect, but withering much sooner; the flowers of *Orobanche* are of this nature.

Maritime (*maritimus*); growing by the sea-side, as *Beta maritima*.

Menstrualis (*menstruus*); of a month, enduring for a month; *bimestris* is used to express an endurance for two months; *trimestris* three months, and so on.

Monocarpous; bearing fruit but once, and then dying; this term includes *annuals*, which live but one year; *biennials*, which live two years; and others, as the American aloe (*Agave americana*), which live for an indeterminate number of years.

Montanus; growing naturally on mountains, as all of what are called Alpine plants.

Multiferus; often-bearing; applied when any part is produced several times in a season.

Mural (*muralis*); growing on walls, as *Draba muralis, Sinapis muralis*, &c.

Mutable (*mutabilis*); changeable, inconstant, prone to change, as in the colour of the flowers of *Cheiranthus mutabilis.*

Nanus; dwarf, small, short in comparison with allied objects, as the dwarf box used as edgings to garden walks.

Nemorose (*nemorosus*); growing in woods, or among trees, as *Anemone nemorosa.*

Nocturnus; of a night, enduring but a night, as the flowers of the night-blooming cereus (*C. grandiflorus*).

Orgyalis; six feet; the length of a torse, or the ordinary height of a man.

Palmaris; three inches long, the breadth of the four fingers of the hand.

Palustris; growing in marshes, as *Caltha palustris, Equisetum palustre*, &c.

Pedalis; twelve inches long, the length of a tall man's foot.

Peregrinous (*peregrinus*); wandering, diffuse; often applied to climbing plants.

Perennans; permanent, not essentially different from persistent.

Perennial (*perennis*); enduring for several years, as herbaceous plants; see *polycarpous.*

Persistent (*persistens, restans*); not falling but remaining fresh until the connected parts are wholly matured, as in the case of the leaves of evergreens.

Polycarpous; bearing fruit many times without perishing; this includes such plants as are *caulocarpous*, that is, those whose stem endures many years, as trees and shrubs, and *rhizocarpous*, that is, those whose root endures many years, but whose stems perish annually, as herbaceous plants.

Pratensis; growing in fields and meadows, as *Geranium pratense.*

Proteranthous; applied when the leaves appear before the flowers.

Pumilus; dwarf, same as *nanus.*

Pusillus, perpusillus; very small in comparison with allied plants or parts.

Pygmæus; dwarf, the same as *pumilus* and *nanus.*

Rhizocarpous; see *polycarpous.*

Rivularis; growing by the sides of rivers or streams, as *Mimulus rivularis.*

Rupestris; growing on or among rocks, as *Silene rupestris.*

Serotinus; late or evening flowering.

Sesqui; a prefix, signifying one half more, thus *sesquipedalis* means a foot and a half.

Sphacelate (*sphacelatus*); withered or dead.

Spithamæus; seven inches long, the length of a small span.

Starved (*depauperatus*); applied when some part is less perfectly developed than is usual in similar plants.

Synanthous; applied when the leaves and flowers appear simultaneously, as in the greater number of plants.

Sylvestris; growing in woods and shady places, as *Dipsacus sylvestris.*

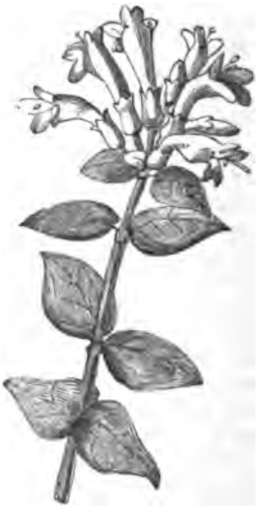
Triduus; enduring three days.

Trimestris; enduring for three months.

Uncialis, pollicaris; of the length of an inch, or the first joint of the thumb.

Unguis; a nail, the length of half an inch, or the nail of the little finger.

Virilis; stout, strong, vigorous.



ÆSCHYNANTHUS PULCHRA.

(*De Candolle.*)

THE BEAUTIFUL ÆSCHYNANTH.

The annexed engraving represents one of the best of the new species of Æschynanthus, which have been introduced by Messrs. Veitch, nurserymen, of Exeter, through the agency of their collector, Mr. Thomas Lobb. The name it bears is most appropriate, for it is in truth a beautiful subject. In the damp forests of Java various species of Æschynanthus abound, growing on the branches and trunks of the trees, and assuming in the disposition of their branches a most gracefully pendulous habit. This, added to the profusion and rich colouring of their blossoms, renders them exceedingly beautiful; and among stove plants—for they of course require stove culture—they take the very first rank.

The present species has naturally this epiphytal pendulous character, though in many cases it may be inconvenient to adopt it under artificial cultivation, especially where the plants are required to be often moved. As it grows, a number of slender branches of moderate length are produced, and these are furnished with firm fleshy opposite broadly ovate leaves, of a deep green colour. On these branches, and the numerous side shoots that are produced, the corymbs of flowers are borne at the end; the flowers are large, tubular, curved, divided at the end into five segments, of a rich deep scarlet colour, marked at the mouth of the tube with yellow streaks. The plants appear to produce these blossoms freely through the whole of the summer.

The annexed wood-cut scarcely conveys an idea of the rich appearance of the plant; the blooms are large, not less than two inches long.

As already hinted, this species was sent to England from Java by Mr. Lobb, and was first flowered and publicly exhibited in the summer of 1846, by Messrs. Veitch, of Exeter.

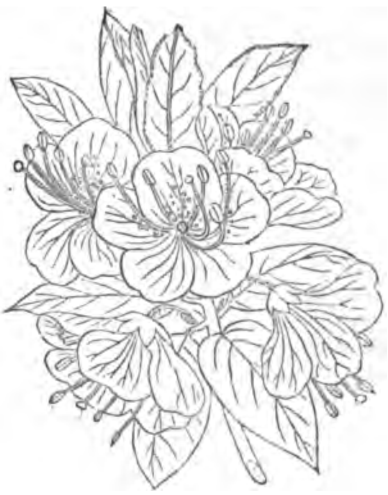
Where it is convenient to attach the plant to a large block of wood, such as the stump of a tree, it would be desirable to allow it to assume its own natural style of growth; and even when grown in pots, for convenience of removal, and necessarily more or less supported by stakes, as much freedom of growth as would be consistent with an orderly appearance ought to be allowed it. When potted, a light turfy soil is most proper for it; a mixture of turfy peat with a small proportion of turfy loam and some decayed wood, would form a very suitable material for its roots; and when grown upon blocks, a portion of moss should be kept about those parts where the roots are forming, and this moss must be frequently damped. Where the latter mode of growth is adopted, it is better to begin with a plant of moderate size in preference to one of considerable size. During the period of their active growth, say from March to June, they require a hot damp stove, such as is usually provided for orchidaceous plants. After that time, at least as the blooms become nearly ready to open, they may be removed to a cooler and drier atmosphere, such as that of a warm greenhouse; the change, however, must be brought about gradually, or probably the blooms would be sacrificed. After blooming, and during the winter, they may be kept in a dry cool stove. There is no difficulty in propagating it from cuttings planted in the ordinary way.

AZALEA OVATA.

(*Lindley.*)

THE OVATE-LEAVED AZALEA.

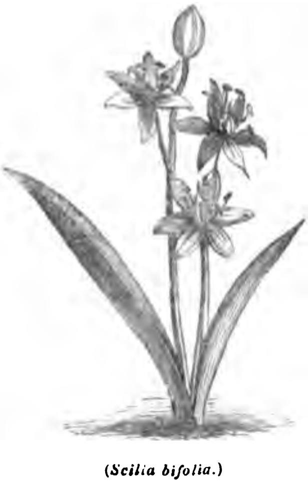
This is one of the plants introduced a year or two since to our gardens, from China, by Mr. Fortune, the botanical collector of the Horticultural Society. It is a shrub perfectly hardy, and of great beauty, and as such will be regarded as a welcome ornament to our shrubberies and "American" borders. It is, moreover, very distinct in its appearance from any of the Azaleas cultivated in our gardens.



The leaves of this plant, which are of an ovate form, in some cases almost heart-shaped, are small, very dark green, and shining. The flowers are produced in clusters at the ends of the branches, growing singly in the axils of the upper leaves; they are somewhat roundish in outline, and resembling in structure those of *Rhododendron daüricum*, and *R. chamæcistus*, that is, without the long funnel-shaped base which is conspicuous in the flowers of most of this group of plants; this form will be clearly understood from the engraving. There are two varieties known, in one of which the blossoms are pure white, in the other tinged with delicate pink; both are spotted with small dark coloured dots on the upper petals.

In reference to this plant, Mr. Fortune observes:—"In the woods this species has an arborescent habit, and grows from eight to twelve feet in height, but on the exposed hill-sides it generally forms a dwarf bush two or three feet high. Its flowers are produced in the greatest profusion in the months of April and May. It was found growing on the sides of the green-tea hills in the province of Chekiang, and also in some of the islands of the Chusan Archipelago, where it is called *King-sze-wha*, or 'silver silk flower' by the northern Chinese. I never met with this species in the south of China, and it is probable that it will be found hardy in the climate of England. It may be propagated easily enough by seeds, cuttings, or layers, or it may be grafted on some of the hardy species. Some of the hardy varieties of Rhododendron would probably make good stocks for this purpose. One of the chief points to be attended to in its cultivation, is thorough drainage. I invariably found it growing on the hill-sides, often amongst rocks and stones where no stagnant water could remain near its roots. This point being attended to, it will be found to thrive well in the same kind of soil in which the other species of Azalea are generally grown."

The hardiness of the plant has been well tested during the winter of 1846-7. In the garden of the Horticultural Society at Chiswick it has been found to bear a temperature of four degrees Fahrenheit, in a low damp situation, both on a south and north aspect, without exhibiting any appearance of suffering.



(*Scilla bifolia.*)

THE SCILLA OR SQUILL.

Among the small bulbous plants which flower in the months of spring, few possess more beauty than the different species and varieties of Scilla. Two or three of the kinds flower early enough to bear company with the blossoms of the crocus, and with these, and indeed every other kind of flower produced at that season of the year, their prevailing cœrulean tint forms an admirable association and contrast. It is to these early flowering kinds that in this place we particularly direct attention. Growing not more than three or four inches high, and bearing for the most part blue flowers, they would form beautiful beds, or margins to beds in the flower-garden, where now such plants as snowdrops and crocuses are almost exclusively depended on for the earliest bloom. The snowdrop, as is well known, furnishes white blossoms only; the crocus supplies yellow, orange, purple, and various particolours; but neither in this is the pure blue colour to be found. Those persons, therefore, who desire that their gardens should burst forth into beauty with the earliest dawn of returning spring, should on no account fail to procure and plant largely of the kinds of squill we are now about to notice.

Scilla bifolia, of which there are some distinct varieties, is represented in the accompanying engraving. It has a small oblong bulb, from which proceed usually two, but sometimes three, dark green, shining, linear, lance-shaped leaves of about three inches in length; from between these arises the erect scape of flowers, reaching about an equal height, bearing a few—six or eight—blue flowers, which are small, star-like, composed of six ovate-lanceolate concave spreading segments. These flowers are produced during March and April, often early in the former month. There is a variety with white blossoms called *S. bifolia alba*, and another with pink flowers called *S. bifolia rubra*. This species is said to have been found wild in England, but this is rather doubtful.

Scilla verna has small roundish bulbs, from which grow several dark green shining linear leaves, about four inches in length, from between which arises the erect scape to about the same height, bearing a roundish head of star-like deep purplish blue flowers; these appear in April and May. This is a native of the sea-coast of the sister kingdoms, in some places covering large tracts of ground.

Scilla sibirica has roundish bulbs, and two or three broadly lanceolate linear shining leaves of a bright green colour, growing about three inches high; the flowers, of which two or three are borne on a nodding scape, are larger than in *S. bifolia*, and drooping; they are of a most beautiful light clear blue tint, and being a vigorous growing though small plant, they are very freely produced, and continue some time in blossom. They are produced early in March and continue throughout the month, a few blooms continuing sometimes to be produced even in April. It is of course a native of Siberia.

Scilla amœna is rather a smaller growing plant than the last; it has roundish bulbs, with broad lanceolate dark green shining leaves, and a scape growing about three inches high, bearing several largish drooping light blue flowers, which resemble those of *S. sibirica*, and are produced in March and April. This species is a native of the Levant.

All of the preceding are very beautiful little plants for ornamenting the flower-garden during the early months of spring, when few gardens can boast of too bountiful a supply.

FLOWERS AND THEIR ASSOCIATIONS.*

BY ANNE PRATT.

THIS work is calculated to please the lover of flowers, and even lay the foundation for a love of botany: there are thousands who love nature, but care little for the scientific arrangements of their odoriferous favourites, and in this little volume there is just enough to please these thousands. The writer seems always at home; and if there be a fault, it is writing too flippantly on subjects, and supposed facts evidently borrowed. Rarely does the sentence, "there is nothing new under the sun," apply to any thing with such great force as to books on gardening. Those who read old works on the subject will recognise in almost all the modern publications a continued system of appropriating other people's ideas, and dressing them in a sort of disguise, but withal so flimsy as to be detected in almost all cases. The present little work pretends to nothing out of the common way, but it is possible to say too much. The authoress would be puzzled a little to prove that "our garden pansies have been introduced hither from various parts of the continent." Thompson of Iver has the merit of raising the earliest of our garden varieties, for the best that were known before were little better than weeds, and could never bear the title of garden varieties. However, we have no doubt the writer had read the fact somewhere. Nevertheless, this volume is admirably adapted for youth.

VEGETABLE SUBSTANCES

USED FOR THE FOOD OF MAN.†

UNDER this title two small volumes have been published, for the purpose of explaining chemically the nature of the numerous vegetables which have been resorted to as food by the various classes of the community at home and abroad—the various plants and mode of using them, the nature of their constituent parts, the quantity of nourishment they contain and its value, and all the varied effects of their use as human food. We have the introduction, in which the writer, whose name is not given, proposes some odd theories as to what the earth would be without vegetation; but we pass over this to general considerations on the nature of vegetable food, and thence to the classification of plants yielding nutritious secretions: wheat, rye, barley, oats, rice, maize, buckwheat, millet, leguminous plants, bread-fruit, the potato, arrow-root, sago, turnip, carrot, parsnip, cabbage, &c. Then plants containing sugar: the fig, vine, banana, date, &c. Then those containing oil, as the olive, and various nuts; and so on, through all the classes of plants. It is a reprint of a work published by the Society for the Diffusion of Useful Knowledge, very considerably improved in respect to the chemical descriptions, and as such useful and very interesting to the young student in the chemistry of horticulture and agriculture.

THE FIELD, THE GARDEN, AND THE WOODLAND.*

BY ANNE PRATT.

IN this volume many interesting facts with which botanists become acquainted in the pursuit of science, are collected and presented to the reader in familiar and agreeable language, well calculated to awaken some interest in the study and observation of nature—a study alike elevating and consoling in its influences on the mind. The fair authoress has not confined herself to the vegetation of Europe, but the whole world has been her woodland; the gardens of all climates have supplied her with one of the powerful features of her work; while the wild flowers of the field have been for the most part selected from subjects within the reach of all her English readers. The natures of the most remarkable plants, trees, flowers, and grasses, have been well explained in simple language, and there is a very proper feeling pervading those explanations wherein the wonderful provisions of the Creator are pointed out. It is a pocket volume that may be advantageously placed in the hands of youth.

NOTES ON FLOWERS AND FLOWERING PLANTS.

COOPERIA DRUMMONDI, *Herbert* (Drummond's Cooperia).—Amaryllidaceæ § Amaryllеæ.—A bulbous plant, with strap-shaped, twisted green leaves, more than a foot long, and a stem about nine inches high, supporting one large fragrant flower, which opens in the evening; the tube of the flower is four inches long, greenish; the six segments each an inch long, white, fading off to reddish as the flower decays. A native of Texas. Introduced in 1834. Flowers in June and July. *Culture.*—Nearly hardy; sandy compost; thorough drainage, and protection in severe weather; propagated by offsets or seeds.

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* Cox, 12, King William-street, Strand.

† Ibid.

* Cox, 12, King William-street, Strand.

Gilia elongata, *Steudel* (elongated-leaved Gilia).—Polemoniaceæ.—An annual of rather a pretty character; it grows six or eight inches high, the stem very little branched, and clothed with cottony wool; the leaves are cottony at the base, green, and nearly smooth near the point, which is awl-shaped and somewhat spiny, with two or three long segments of the same form; the flowers are brilliant blue, with white projecting anthers; they grow in cottony heads, closely surrounded by long pungent linear bracts. Native of California, in fields near Montery. Introduced by Mr. Hartweg, in 1847. Flowers in August (when sown in May). It is also called *Hugelia elongata* (Bentham). *Culture.* — Hardy; common garden soil; propagated by seeds. (226)

Hollböllia acuminata, *Lindley* (taper-leaved Hollböllia).— Lardizabalaceæ. — An evergeen twining plant, with the habit of *H. latifolia*, differing in having its leaves composed of taper-pointed, not blunt, leaflets, its racemes with stalks much shorter than those of the leaves, and its purplish flowers not half so large; the flowers are deliciously fragrant, resembling the perfume of the orange. Native of Nepal. Introduced in 1845. Flowers in the spring. *Culture.*—Nearly (perhaps quite) hardy; sandy loam and peat; propagated by cuttings. (227)

Begonia biserrata, *Lindley* (doubly serrated Begonia).—Begoniaceæ.—A perennial herbaceous species, with fibrous roots, and disposed to produce suckers from its crown; the stem is terete and dull purple, two feet or more in height, and covered with short harsh pubescence; the leaves are palmate, and so oblique that frequently there are but four lobes instead of five; the flowers are pale pink, and grow three or more in a cluster, in the upper axils or at the end of the branches. Native of Guatemala. Introduced in 1847. Flowers in August. *Culture.*—Requires a stove, and rest in winter; light loamy compost; propagated by cuttings. It may be flowered at any season by regulating the times of resting and starting it. (228)

Aquilegia leptoceras, *Fischer and Meyer* (slender-spurred Columbine).—Ranunculaceæ § Helleboreæ.—A neat and pretty herbaceous perennial, growing about nine inches high, with slender purplish-green stems; triternate leaves, with wedge-shaped rounded leaflets, and one or two blossoms (on each stem), of a pale bright violet colour, the tips of the sepals greenish, and of the petals a clear bright straw colour. Native of Siberia. Introduced in 1838. Flowers in June. *Culture.*—Hardy, suitable for rockwork; sandy loam and leaf mould; propagated by seeds sown as soon as ripe, or by division of the plant. (229)

Wulfenia Amherstiana, *Bentham* — (Lady Amherst's Wulfenia).—Scrophulariaceæ § Rhinanthideæ.—An alpine perennial stemless plant, with oblong leaves, peculiarly convex, as if blistering, very regularly and doubly crenated, except near the base, where they become pinnatifid; the flowers grow in slender drooping one-sided spikes of about eight inches long, and are individually small and of a lilac colour. Native of Chinese Tartary, the Himalayas, Kamaon, &c. Introduced in 1846. Flowers in June and July. *Culture.*—Hardy, suitable for rockwork; good garden soil; propagated by division of the plant, or by seeds. (230)

Clematis Grahami, *Bentham* (Graham's Clematis).—Ranunculaceæ § Clematideæ.—A scrambling shrub, suitable for covering trellis-work, with much the appearance of *C. virginiana.* The leaves are pinnated, with ovate, slightly cordate, acuminate leaflets; the flowers are small, downy, pale green, of no beauty; they are borne in axillary and terminal slender panicled corymbs. Native of Mexico, on the mountain of Anganguco. Introduced in 1846. Flowers in August and September. *Culture.*—Hardy; common soil; propagated freely by cuttings. (231)

Navarettia squarrosa, *Hooker and Arnold* (squarrose Navarettia).—Polemoniaceæ.—A rather pretty annual plant, having considerable general resemblance to *Triptilion spinosum*, but with less intensely coloured flowers. The plant is covered with hairs, which secrete a viscid matter, emitting a most unpleasant foxy odour. The habit is erect, branching; the leaves are cut up into many sharp spiny segments; the flowers are blue, and grow in close spiny heads. Native of New California. Introduced in 1847. Flowers in August and September. It is also called *Gilia pungens* (Hooker); *G. squarrosa* (Hooker); *Hoitzia squarrosa* (Eschscholtz); *Sigochloa pungens* (Bentham). *Culture.*—Hardy; good garden soil; propagated by seeds. (232)

Browallia Jamesoni, *Bentham* (Jameson's Browallia).—Scrophulariaceæ § Salpiglossideæ.—A very distinct and handsome shrubby plant, growing from two to four feet and upwards in height, clothed with soft pubescence, and having small rough ovate shining leaves, and sub-corymbose cymes of somewhat crowded deep yellow and orange-coloured blossoms, which have a long slender tube, and a roundish somewhat crimped expanding limb, of an inch or more in diameter. Native of New Granada, Ecuador and Peru, growing in woods at a considerable elevation. Introduced in 1846. Flowers in the summer months. *Culture.*—Requires a greenhouse; turfy peat and loam; propagated by cuttings, planted in sand, in a mild hot-bed. (233)

Gladiolus Brenchleyensis, *garden hybrid* (Brenchley Corn-flag).—Iridaceæ.—This is a very handsome hybrid Gladiolus, with the habit and character of *G. psittacinus* (*natalensis*). It is a tall growing plant, attaining four or five feet high, and bearing a lengthened raceme of large brilliant scarlet blossoms. A garden hybrid, raised by Mr. Hooker of Brenchley, between *G. psittacinus* and *G. floribundus*, and a striking improvement upon both its parents; raised about 1846. Flowers in July and August. *Culture.*—Hardy, or nearly so; rich turfy loam; propagated by offsets. (234)

Crocus speciosus, *Marsch* (handsome Crocus).—Iridaceæ.—A small and very beautiful bulbous plant, one of the finest of the genus; the flowers have blue-purple sepals, and paler petals prettily veined. There is a white variety. Native of Hungary, and eastward as far as the Crimea. Introduced in 1844? Flowers in October. *Culture.*—Hardy; dry rich soil; propagated by off-sets, or by seeds which ripen freely. (235)

Crocus pulchellus, *Herbert* (pretty Crocus).—Iridaceæ.—A small and very beautiful bulbous plant, with broad grassy foliage streaked with white; it is allied to *C. speciosus* (Marsch); the flowers are of a pale bluish pearl colour, with darker veins within, and have milk-white anthers. It also exists with flowers of the purest white with an orange throat. Native of the forest of Belgrade and Mount Atlas. Introduced in 1844? Flowers in October. *Culture.*—Hardy; dry rich soil; propagated by offsets, or by seeds which ripen freely. (236)

Ceropegia Cumingiana, *Decaisne* (Cuming's Ceropegia).—Asclepiadaceæ § Stapeliæ.—A pretty free-flowering smooth climbing plant, with ovate-cordate sharply pointed leaves, and bunches of large blossoms, variegated with dull green and reddish-brown. Native of Philippine Islands and Island of Balla. Introduced about 1846. Flowers in August. *Culture.*—Requires a stove; turfy peat soil, well drained; propagated by cuttings planted in sand. (237)

Calceolaria chelidonioides, *var. Leedsii* (Mr. Leeds's Slipperwort).—Scrophulariaceæ § Antirrhinideæ-Calceolareæ.—Probably a distinct species. It is a creeping herbaceous (and apparently perennial) plant, differing from the true *C. chelidonioides*, in having the leaves almost always entire, instead of being pinnatifid in every part, and deeply toothed and cut; the flowers are not described. Native of Bolivia. Introduced in 1847. Flowers in summer. *Culture.*—Requires a frame; light turfy loam; propagated by cuttings, or by seeds. (238)

Achimenes pyropæa, *Lindley* (ruby Achimenes).—Gesneraceæ § Gesnereæ.—A pretty little species of this popular genus, something like the original *A. coccinea*, and intermediate between that and *A. rosea*, having the habit and foliage of the latter, and the scarlet blossoms of the former, with the advantage of coming earlier into bloom. A native of Guatemala. Introduced in 1847. Flowers from June to October. *Culture.*—Requires a hotbed or stove in the earlier stages of growth; blooms in a greenhouse; turfy peat and loam; propagated by its scaly tubers, by cuttings, or by leaves. (239)

Gompholobium polymorphum, *var. splendens.*—Fabaceæ § Papilionaceæ-Eupodalyrieæ.—A very beautiful slender climbing plant, suitable for pot culture, with oblong retuse leaflets, and butterfly-shaped flowers of the richest crimson, and larger than in the original species. Native of Australia. Introduced about 1845. Flowers in summer. *Culture.*—Requires a greenhouse; turfy peat soil; propagated by cuttings planted in sand. (240)

Crocus annulatus, *var. nubigena* (cloud-born Crocus).—Iridaceæ.—A small and very handsome bulbous plant, which exists under considerable variations in its native localities; its flowers are white, sometimes speckled and feathered on the outside with dark brownish-purple. Native of the summit of Mount Gargarus. Introduced in 1846. Flowers in the spring months. *Culture.*—Hardy; common soil; propagated by offsets. (241)

Crocus aërius, *Herbert* (aërial Crocus).—Iridaceæ.—A small and handsome bulbous plant, with very narrow leaves, but producing handsome blossoms, in one form (*stauricus*) white tinted with violet, in another (*pulchricolor*) of a deep violet, yellow in the lower part. Native of the Alps of Trebizond and Bithynian Olympus. Introduced in 1845. Flowers in the spring months. It is also called *C. Sibthorpianus* (Herbert). *Culture.*—Hardy; common soil; propagated by offsets. (242)

Hypoxis canadensis, *Maund* (Canadian Hypoxis).—Hypoxidaceæ.—A small and rather interesting herbaceous perennial, growing about six inches high, with long narrow leaves, and six-petalled bright yellow flowers (green on the outside) growing two or three on a stalk. It is a neat plant, ranking with scillas and crocuses. Native of North America. Introduced about 1838? Flowers in June. *Culture.*—Hardy, or perhaps safer in a frame; common good garden soil; propagated by division of the plant, or occasionally by seeds. (243)

Echinocactus cinnabarinus, *Hooker* (cinnabar-flowered Echinocactus).—Cactaceæ § Echinocactidæ.—A very neat (and when in blossom, handsome,) species of the group of dwarf Cacti. The plant is globose, depressed in the centre, six or seven inches in diameter, and three or four in height; the surface is formed of numerous small four-sided tubercles, arranged in oblique spiral lines, and each bearing a cluster of pale brown needle-shaped slightly curved spines. The flowers are borne on the upper part of the plant, solitary, three inches in diameter, of a rich cinnabar colour, the petals being obtuse and spathulate. Native of Bolivia. Introduced in 1846. Flowers in July. *Culture.*—Requires a greenhouse; well-drained sandy loam; kept moderately dry in winter; propagated by seeds, or planting the offshoots. (244)

ECHEVERIA RETUSA, *Lindley* (blunt-leaved Echeveria).—Crassulaceæ § Crassuleæ.—A pretty succulent plant of dwarf habit, that is, growing from one to two feet high, with an imbricated (but not rosulate, as in many allied plants) tuft of oblong spathulate retuse leaves, bordered with purple. The flowers are rich crimson on the outside, yellow within, and grow in a compact panicle at the top of the stem; they are in form somewhat pitcher-shaped, made up by the agglutination of five thickened somewhat three-angled petals, the points of which are acute and reflexed. Native of Mexico, on rocks near Anganguco. Introduced in 1846. Flowers throughout the winter. *Culture.*—Requires a greenhouse; sandy loam and leaf mould; propagated freely by the leaves, planted in sand. (245)

SACCOLABIUM MINIATUM, *Lindley* (vermilion Saccolabium).—Orchidaceæ § Vandeæ-Sarcanthidæ.—No. 138.—This very handsome and compact growing epiphyte has distichous strap-shaped leaves, with much the habit and appearance (except in being smaller) of *S. præmorsum.* The racemes of flowers are thrown out laterally from the axils of the leaves, and are spreading, consisting of ten or a dozen pretty orange-red blossoms. The plant has a remarkably neat and compact habit of growth, and blooms freely. Native of Java. Introduced in 1845. Flowers in February. *Culture.*—Requires a hot moist stove; to be planted on a block of wood, or in an open basket; propagated by division of the plant. (246)

IPOMŒA MELÆNA, *Lindley* (black-eyed Ipomœa).—Convolvulaceæ § Convolvuleæ.—A handsome climbing plant, with variously-shaped rigid leaves—sometimes entire, sometimes deeply three-lobed, in all cases perfectly smooth and acuminate. The convolvulus-like flowers grow in the way of *I. Horsfalliæ*, in stout clusters of about four together; they are white, changing to pink, and have a dark eye or centre. Cultivated in 1847, in the garden of the Horticultural Society; history unknown. Flowers in April and May. *Culture.*—Requires a stove; suitable either for trellis or rafters; rich soil; propagated by cuttings or by seeds. (247)

ZINGIBER AMARICANS, *Blume* (bitterish Ginger).—Zingiberaceæ.—An unornamental herbaceous perennial plant with the habit of the common ginger, but taller; the leaves narrow, eight inches long, and one broad; the flowers in massive spikes four inches long, elevated about six inches from the ground, with rounded convex dull green bracts, and yellow blossoms, having a thick-lobed lip, the centre lobe largest and speckled with purple; the flowers expand in the evening, and wither next morning. Native of Penang and Java. Introduced in 1846. Flowers in July. *Culture.*—Requires a stove; rich loamy soil; propagated by division of the roots. (248)

CROCUS INTROMISSUS, *Herbert* (intromitted Crocus).—Iridaceæ.—A small and interesting bulbous plant, producing about four short leaves; the flowers are not described. Native of Syria, on the calcareous hills near Damascus. Introduced by Dr. Herbert in 1845, but subsequently lost. Flowers in the autumn. It may prove to be a variety of *C. sativus*, the saffron crocus. *Culture.*—Hardy; common or chalky soil; propagated slowly by offsets, also by seeds. (249)

CROCUS CANCELLATUS, *var. Kotschianus* (Kotschy's Crocus).—Iridaceæ.—A small and interesting bulbous plant, with smooth channelled leaves, and beautiful violet-coloured flowers, sometimes pale bluish or almost white. Native of the summit of Bulgar Dagh (7500 ft.), and other parts of the ridges of Mount Taurus. Introduced by Dr. Herbert, but not in a living state, in 1845. Flowers at the end of summer or in the autumn. *Culture.*—Hardy, common soil; propagated by offsets. (250)

CROCUS CANCELLATUS, *var. Mazziaricus* (Mazziari's Crocus).—Iridaceæ.—A small and interesting bulbous plant, with smooth channelled leaves, and producing white flowers with a yellow throat, and more or less streaked. Native of Santa Maura, and on the heights of Megaoros, and the Cephalonian mountains. Introduced in 1845? Flowers in October. *Culture.*—Hardy; common soil; propagated by offsets. (251)

CROCUS FLEISCHERIANUS, *Gay* (Fleischer's Crocus).—Iridaceæ.—A small and interesting bulbous plant with narrow smooth precurrent foliage and white blossoms slightly streaked with brownish purple on the outside. The species is very florid, often producing several flowers from the same crown. Native of the limestone hills of Smyrna. Introduced in 1845. Flowers in the spring months. *Culture.*—Hardy; common soil; propagated by offsets. (252)

PÆONIA MOUTAN, *var. picta* (painted Moutan).—Ranunculaceæ § Helleboreæ.—This is a very handsome variety of the well-known *Pæonia Moutan*, or tree pæony. Its habit is the same; the segments of the leaves are narrower than in some varieties, of a dull bluish-green; the flowers are semidouble, the ground colour light rose, streaked stained and veined with rich deep rose toward the edges; the petals are rather ragged at the edges, something in the way of our parrot tulips. Native of China. Introduced in 1844. Flowers in May. *Culture.*—Almost hardy; is the better for a little protection in spring; rich sandy loam; propagated by grafting on the roots of *P. albiflora*, or by division. (253)

COBURGIA STYLOSA, *Lindley* (long-styled Coburgia).—Amaryllidaceæ § Amarylleæ.—A pretty bulbous plant, with rigid acute glaucous leaves, and stems growing about two feet high, bearing an umbel of three to five tube-like flowers, each five inches long, and two across, the tube club-shaped and bent, and of a dark glaucous green, divided at the end into six rich orange-red lobes of a leathery texture. Native of Ecuador, in ravines near Quito. Introduced in 1846. Flowers in March. *Culture.*—Requires a greenhouse; sandy loam, and leaf-mould; to be dry when at rest; propagated by offsets. (254)

CHIRITA WALKERIÆ, *Gardner* (Mrs. Walker's Chirita).—Gesneraceæ § Cyrtandreæ-Didymocarpidæ.—A handsome shrubby (but fleshy) plant, with stout downy, herbaceous branches, ovate-lanceolate downy leaves growing in whorls of three, and axillary flowers, more than an inch across, the limb deep purple, the interior of the tube blue, and on the lower side a broad deep yellow line. Native of Ceylon. Introduced in 1845. Flowers nearly all the year. *Culture.*—Requires a stove, rich loamy soil; propagated by cuttings placed in a hot-bed. (255)

ÆSCHYNANTHUS LONGIFLORUS, *De Candolle* (long-flowered Æschynanth).—Gesneraceæ § Cyrtandreæ-Didymocarpidæ. — A beautiful shrubby plant, with procumbent or spreading and rooting branches, bearing opposite, broadly lanceolate, very acuminate, fleshy leaves, and terminal fascicles of flowers, usually on pendent branches, themselves standing erect; they are long, slender, and curved, of a rich crimson, the inside yellow, surrounded by a band of black. Native of the mountain woods of Java. Introduced by Messrs. Veitch, in 1845. Flowers at various times of the year. Also called *Lysionotus longiflorus* (Blume). *Culture.*—Requires a hot moist stove; to be planted in turfy peat soil, or attached to a block of wood; propagated by cuttings in sand, in a hot-bed. (256)

PENTSTEMON GENTIANOIDES, *var. alba* (white gentian-like Pentstemon).—Scrophulariaceæ § Antirrhinideæ-Cheloneæ.—This is a white-flowered variety of *P. gentianoides*, a handsome half-shrubby and nearly hardy species now common in our gardens. It has the same habit, growing two feet and upwards in height, with long spikes of its tubular blossoms, and differs only in the colour of the flowers, in which particular it forms a very striking and admirable contrast. It has, no doubt, originated in our gardens, and was raised about 1845; but we have no information of its origin. *Culture.*—Nearly hardy; common garden loamy soil; propagated freely by cuttings. (257)

EPACRIS TAUNTONIENSIS, *garden hybrid* (Taunton hybrid Epacris).—Epacridaceæ § Epacreæ.—An ornamental and free flowering hybrid Epacris, supposed to have originated between *E. grandiflora* and *E. impressa*, retaining much of the habit and form of the former, and taking on in place of the white in *E. grandiflora*, the pink colour of *E. impressa*. Though a handsome and distinct variety, it is not so strikingly beautiful as the old *E. grandiflora*. A garden hybrid raised by Mr. Ball of Taunton, about 1843? *Culture.*—Requires a greenhouse; turfy sandy peat; propagated by cuttings of the young shoots, planted in sand, under bell-glasses. (258)

CROCUS CAMPESTRIS, *Pallas* (field Crocus).—Iridaceæ.—A small and interesting bulbous plant, with the usual habit of crocuses, and bearing flowers of a greyish-blue colour. Native of Roumelia, on the hills near the river Marissa. Introduced, but not in a living state, by Dr. Herbert, in 1845. Flowers late in the autumn. It is nearly allied to *C. Cartwrightianus* (Herbert); and also bears the names of *C. hybernus* (Fridwaldsky); and *C. montanus* (Clusius). *Culture.*—hardy; common soil; propagated by offsets. (259)

CROCUS PALLASIANUS, *Herbert* (Pallas's Crocus).—Iridaceæ.—A small and interesting bulbous plant, with about seven narrow leaves, and pale violet-coloured flowers, striated at the base, on the outside. Native of sunny hills in the Crimea. Introduced by Dr. Herbert, from a Ghent nursery in 1845? Flowers in the autumn months. It is the *C. Pallasii* (Marsch). *Culture.*—Hardy; common soil; propagated by offsets. (260)

HIBISCUS GROSSULARIÆFOLIUS, *Miquel* (gooseberry-leaved Hibiscus).—Malvaceæ § Hibisceæ.—A handsome shrub, growing three to four feet high, with alternate, deeply three or five-lobed leaves, having some resemblance to those of the gooseberry. The flowers grow singly from the axils; they are large and handsome, of a rich blueish-purple, the petals triangular, one of the upper angles rounded, the other mucronate. Native of the Swan

River Colony. Introduced in 1845. Flowers throughout the summer. *Culture.*—Requires a green-house; grows well against a wall outdoors in summer; light loamy soil; propagated by cuttings or by seeds. (261)

COLUMNEA CRASSIFOLIA, *Hooker* (thick-leaved Columnea).—Gesneraceæ § Gesnereæ. —A fleshy and shrubby plant, flowering when a foot high, throwing out roots from the stem, and bearing opposite erect narrow lanceolate fleshy leaves, and large axillary erect flowers, which are curved, three to four inches long, red and shaggy, with long red hair, two-lipped, with the mouth much gaping. It is both a curious and a handsome plant. Probably a native of Mexico. Introduced from Liege about 1846. Flowers in the summer. *Culture.*—Requires a stove; light turfy soil; propagated readily by cuttings. (262)

SIPHOCAMPYLUS GLANDULOSA, *Hooker* (glandular Siphocampylus).—Lobeliaceæ § Lobeleæ.—A free growing half shrubby herbaceous stemmed plant, growing two to three feet high, with large alternate cordate wrinkled leaves, from whose axils proceeds a solitary flower, club-shaped, downy, and of a light purple-rose colour, they are also curved downwards. Native of Bogota. Introduced in 1845. Flowers freely in summer. *Culture.*—Requires a greenhouse, or cool stove; rich loamy soil; propagated readily by cuttings. (263)

ISOPOGON SPHÆROCEPHALUS, *Lindley* (round-headed Isopogon).—Proteaceæ § Nucumentaceæ-Proteidæ.—A neat shrub, growing three or four feet high, with stout branches, the younger ones clothed with spreading hairs. The leaves are three or four inches long, broad-linear, or linear-lanceolate, downy or silky, especially at the margins. The flowers are yellow, villous, and grow in dense terminal heads, which are sometimes clustered several together. Native of the Swan River colony. Introduced in 1845. Flowers in the spring months. *Culture.*—Requires a greenhouse; turfy peat and loam; propagated by cuttings planted in sand. (264)

BLETIA GEBINA, *Lindley* (the Gebina Bletia).—Orchidaceæ § Epidendreæ-Bletidæ. —A terrestrial orchid, nearly related to *Bletia hyacinthina.* It is a herbaceous perennial, with large oblong lanceolate leaves, and a slender stem bearing from six to eight flowers, nearly white, faintly tinged with blush, and with a pale violet lip. Native of Japan, according to Messrs. Loddiges. Introduced in 1843. Flowers in April. It is the *Calanthe gebina* of Messrs. Loddiges' catalogue. *Culture.*—Nearly hardy, may be grown in a greenhouse or pit; fibry peat soil and leaf mould; should be kept rather dry and cool when dormant; propagated by division of the plant. (265)

PHOLIDOTA CHINENSIS, *Lindley* (Chinese Pholidota).—Orchidaceæ § Epidendreæ-Cœlogynidæ.—A small neat and ornamental epiphyte, bearing ovate wrinkled quadrangular pseudo-bulbs on a short stout rhizome. The pseudo-bulbs bear one or two oblong undulated leaves; the flowers, which grow in short drooping racemes, are greenish white, the lip pure white. In Chinese drawings this plant is represented as bearing yellow flowers; Mr. Fortune also sent it as a yellow-flowered Cœlogyne; but our climate does not seem to produce such. Native of China, on mountain sides, Hong Kong. Introduced in 1846. Flowers in May. *Culture.*—Requires a cool stove; to be attached to a block of wood and suspended; propagated by division of the plant. (266)

CROCUS HADRIATICUS, *var. chrysobelonicus* (Chrysobelonian Crocus).—Iridaceæ.—A small and interesting bulbous plant, with smooth channelled leaves, and white flowers having a deep golden throat, and streaked on the outside with reddish purple. Native of stony hills in Santa Maura; Dr. Herbert gathered it on the hill called Chrysobeloni. Introduced in 1845. Flowers from October to December. It has also been named *C. Cartwrightianus var. Leucadensis* (Herbert). *Culture.*—Hardy; common soil; propagated by offsets. (267)

CROCUS VISIANICUS, *Herbert* (Visiani's Crocus).—Iridaceæ.—A small and interesting bulbous plant, with long narrow foliage, and violet-coloured flowers, having a yellow-coloured throat. Native of Dalmatia. Introduced, but not in a living state, by Dr. Herbert, in 1845. Flowers in the autumn. It is called *C. Pallasianus* (Visiana), but is not the truo *C. Pallasianus* of the Crimea. *Culture.*—Hardy; common soil; propagated by offsets. (268)

ANGELONIA ANGUSTIFOLIA, *Bentham* (narrow-leaved Angelonia).—Scrophulariaceæ § Antirrhinideæ-Hemimerideæ. — A dwarf growing annual (?) plant of considerable beauty, attaining about a foot in height, with upright slender stems, the upper part of which is furnished with flowers from the axils of the leaves, forming a long leafy raceme. The leaves are narrowly lance-shaped, and acute; the flowers are moderate-sized, violet-coloured, and in form resembling those of the common Alonsoas. The plant has the habit and appearance of *Angelonia salicaræfolia*, but is much smaller and more slender, and with the individual flowers about half as large. Native of Xalapa, in Mexico. Introduced by Mr. Hartweg in 1846. Flowers in July. *Culture.*—Requires a cool stove; turfy loam and leaf mould; propagated by cuttings (?) or by seeds (?), or probably by both. (269)

CONTEMPORARY WRITINGS,

AND ORIGINAL NOTES CONNECTED WITH HORTICULTURE AND NATURAL HISTORY.

Red spider.—To get rid of this pest when once established in a house, wash the flues or hot-water pipes with black sulphur mixed up with water; this must be done when the pipes are cold. When heat is applied the fumes of the sulphur will destroy the red spider, which is a small species of Acarus. To prevent their becoming established in a house, keep a moist and sweet atmosphere.

Garden walks.—Where it is difficult—as it sometimes is—to get good binding gravel for forming garden walks, they may be made tolerably firm for the summer, by having them broken up in spring, say six inches deep (there should be at least this depth of gravel), and taking out a portion at one end, turning the whole regularly back in the way of trenching, saturating it at the same time with water in which clay has been dissolved to the consistence of very thin paint; they must be made solid and level, and well rolled while wet, and then allowed to become quite dry before they are used, which takes a fortnight or so according to the weather.

Small birds are very destructive both to seeds, either sown or being saved, and also to the buds of fruit trees. Of the means employed to frighten them away, that of having some cats tied up in different parts of the garden, is perhaps as good as any. The same end may be in a great measure attained by domesticating cats in a garden.

Preserving vegetables, &c.—It sometimes happens that particular crops come to perfection faster than they are used. When it is required to preserve them, this may be done in most cases for at least a week, by cutting or gathering them just as they are fully grown, and laying them on the brick or stone floor of a cool store-house, or root-room. Cauliflowers, lettuces, &c. should be cut with the outside leaves; asparagus should be tied in bundles and set upright with the lower ends in water; French beans, when scarce, may be set close together with the stalk in a shallow pan of water, and, when more abundant, may, as well as peas, be spread on a clean part of the floor, and loosely covered.

Glazing.—Where, from economical motives, the repairing of damages in the sashes of garden-frames is done at home, it may be useful to know how to make putty. It is done thus:—With ten pounds of whitening, and one pound of white-lead, mix a sufficient quantity of boiled linseed-oil, and a wineglassfull of sweet-oil. The proper quantity of oil will be ascertained by mixing gradually. The sweet-oil prevents the lead from hardening, and preserves the putty. Where this course is adopted, all the frames should be glazed with the same-sized glass—of which a stock should be kept on hand, it being often of importance to have repairs of this kind attended to without delay.

Earwigs.—The best remedy for these is to trap them, and this is both tedious and ineffectual, as fresh swarms take the place of those which are destroyed. Any hollow bodies will serve to trap them—such as inverted flower-pots rested on the stakes; bean-stalks cut into lengths and laid among the branches; the wood of elder divested of the pith, or pieces of bamboo-cane: in all these cases one end should be closed while the other is left open. These traps should be examined every morning, and the entrapped insects shaken out into a pan of scalding water.

Transplanting seedlings.—All the culinary crops which are raised from seeds, and planted out subsequently, are the better for being "pricked out" or transplanted, at least once before they are finally placed; this is best done when they have formed two or three pairs of leaves. Plant on fresh dug ground, using a dibble or blunt-pointed stick to fix the plants; thrust this somewhat obliquely into the soil, deep enough to allow the roots to be placed straight; then with the point of the dibble press the soil down firmly to the roots. Seedlings should be taken up with a trowel, and the side roots, as far as possible, retained; tap roots should be shortened back. If done in dry weather, dip the roots in a puddle formed by mixing a rich compost with water.

Worms on lawns are very troublesome when numerous, especially in spring and autumn, by throwing up their casts, which disfigure the turf and are tedious to remove: to lessen their numbers, water the turf with one of the following mixtures:—A quarter of an ounce of corrosive sublimate *dissolved* in three gallons of water; one pound of caustic lime, mixed with twenty gallons of water, and allowed to subside—use the clear liquid; or one pound and a half of salt, *dissolved* in four gallons of water. Give the ground a good soaking of the mixture, *when it is previously well moistened* by rain or by the artificial application of water.

Preserving apples and pears.—Such fruits as the late kinds of apples and pears, which it is desired to keep for a length of time, must be gathered and conveyed to the fruit-room without sustaining any bruises; they should hang until they are mature or until in danger from severe frost. After lying singly on the shelves of the fruit-room, for a week or two, they should be packed in jars among dry sand, and set in a cool uniform temperature. When required for use, they should be unpacked a few at a time, in the order in which the different varieties ripen; and after laying a few days in the cool atmosphere of the fruit-room, they should be submitted for a day or two more, just before they are wanted, to a temperature of about sixty degrees. This applies to the later kinds. The choice fruits of the summer and autumn kinds should be as carefully gathered, and removed to the fruit-room until they are wanted for use.

PRESERVING WALL FRUITS.—Such fruits as the peach, apricot, plum, &c. may be kept for a week or more, if gathered when ripe, and laid carefully without a bruise and thinly on the shelves of a dry cool fruit-room, where there is a uniform low temperature. The same principle must be followed when it is required to keep such small fruits as strawberries, raspberries, cherries, gooseberries, currants, &c. for a few days.

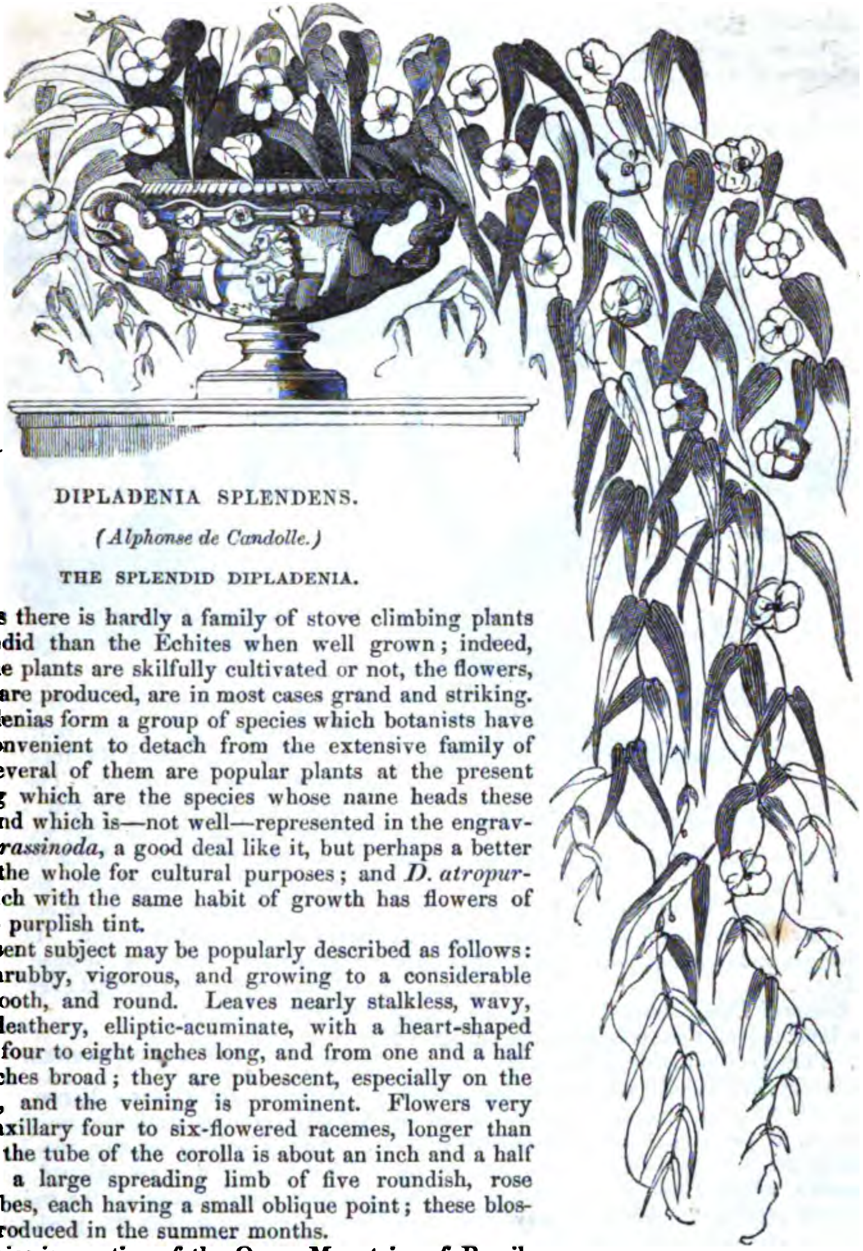
AMERICAN BLIGHT.—In the Horticultural Society's garden, a number of apple-trees affected by the American blight have been cleared by the use of coal-tar naphtha applied with a small brush. The least touch of the naphtha destroys the insects; but, in order to economise labour as well as material, it is desirable to cut away or shorten in all infested twigs that can be spared, previous to dressing the trees. When the pest is established it takes some perseverance and watchfulness, however, to get quite rid of it, for, if neglected for a time, a fresh race springs up. The matter is, however, worth perseverance, and if this be bestowed, a complete cure will in due time be effected.

FAIRBEARD'S CHAMPION OF ENGLAND PEA.—This has been grown in the Chiswick garden, and is reported as a variety meriting attention. The pods are large, and well filled with large—perhaps, for some, too large—peas; but they are tender, and of good quality, and are, therefore, worthy of being cultivated.

HERBACEOUS INARCHING WALL TREES.—Various means are resorted to by gardeners to supply a deficiency of branches in wall trees, and with greater or less success; we imagine, however, that the following French mode, which may be termed herbaceous inarching, so far at least as the scion is concerned, offers advantages over every other plan at present in use. It is adopted in the Horticultural Society's garden, and consists in inarching the growing extremities of adjoining shoots to the parts of the stem from which it is desirable branches should proceed. A small slice is taken off near the extremity of the young shoot, and a corresponding extent of surface immediately below the inner bark of the stem is exposed; the two are joined together and a perfect union is very soon effected. By this means tiers of horizontals in young trees may be formed without disappointment, and branches may be replaced in old trees more readily than by the old mode of side-grafting or budding.—*G. C.*

EARTHING UP CULINARY CROPS, such as cauliflowers, brocoli, beans, &c. is often attended with more injury than benefit. This is usually the case, when the draw-hoe only is used in performing the operation, its work being superficial, and the trampling backwards and forwards between the rows, rendering the spaces between them almost as hard as gravel-walks, thus forming ditches in wet weather, and breaking into great cracks and fissures during periods of drought. In the case of crops which it is desirable to earth up in this manner, the spaces between the ridges should, after the other part of the operation is completed, be well broken up with the fork or the pronged hoe; and in this way the advantages of surface-stirring will be realized.

MILDEW ON GREENHOUSE PLANTS. — It often happens that hard-wooded greenhouse plants of the more delicate kinds, such as chorozemas, for example, suffer much during the summer season from attacks both of mildew and of red acarus (or red spider, as it is commonly called). They must, therefore, be closely watched. To guard against these pests, both as concerns these and similar plants, it is a good plan to lay the plants on their sides and give them a thorough syringing with clear water; and then, while they are wet, to dust the plants over, both the under and upper side of the leaves, with sulphur. In a week or ten days this may be washed off. This will generally clear the plants for the season. The washing or syringing should be a *bonâ fide* one. The pots may be supported in a one-sided direction by setting two bricks V fashion, but not quite close together, against which to lean them; the syringing will then command the under-side of the leaves and branches, as well as the upper and lateral surfaces. It is not a few syringefuls of water either that will suffice for these washings. Every plant, of any size, should have two or three gallons of water, or more, thrown over them, and usually with as much force as the syringe will command: of course a little judgment must be exercised, so as not to drive the water in a direction to break or damage the plants. By leaning the pots in the way recommended, too, another advantage is gained; most of the water drips off instead of—as it would otherwise do—of running down the stems, and injuriously saturating the soil in the pots.



DIPLADENIA SPLENDENS.

(Alphonse de Candolle.)

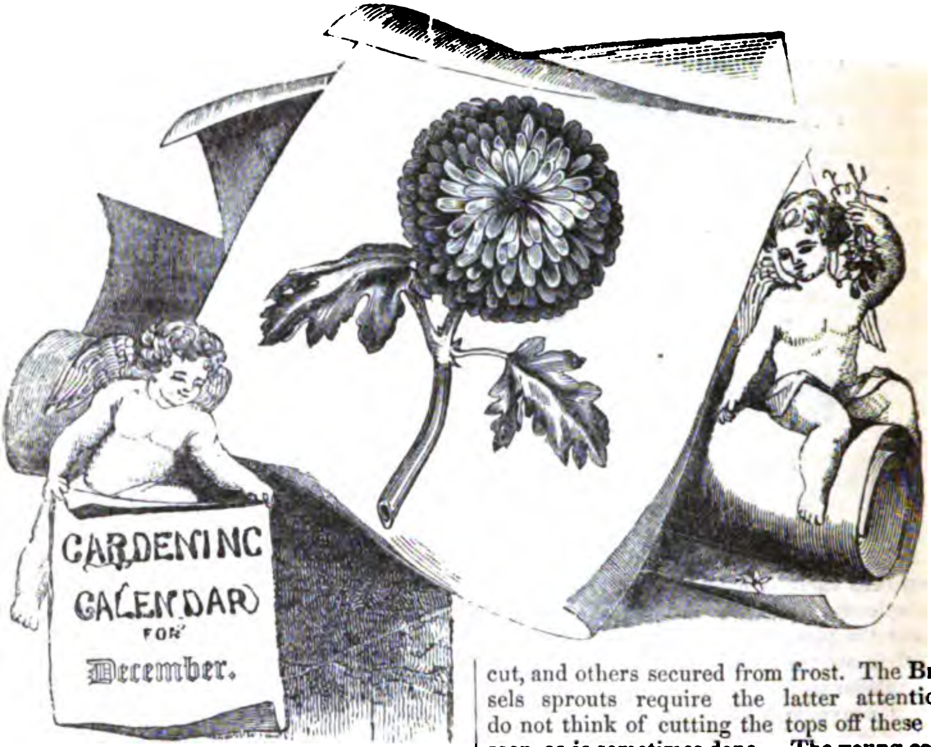
THE SPLENDID DIPLADENIA.

Perhaps there is hardly a family of stove climbing plants more splendid than the Echites when well grown; indeed, whether the plants are skilfully cultivated or not, the flowers, when they are produced, are in most cases grand and striking. The Dipladenias form a group of species which botanists have found it convenient to detach from the extensive family of Echites: several of them are popular plants at the present day, among which are the species whose name heads these remarks (and which is—not well—represented in the engraving); *D. crassinoda*, a good deal like it, but perhaps a better species on the whole for cultural purposes; and *D. atropurpurea*, which with the same habit of growth has flowers of a rich deep purplish tint.

Our present subject may be popularly described as follows:—Stems shrubby, vigorous, and growing to a considerable length, smooth, and round. Leaves nearly stalkless, wavy, somewhat leathery, elliptic-acuminate, with a heart-shaped base, from four to eight inches long, and from one and a half to three inches broad; they are pubescent, especially on the under side, and the veining is prominent. Flowers very showy, in axillary four to six-flowered racemes, longer than the leaves, the tube of the corolla is about an inch and a half long, with a large spreading limb of five roundish, rose coloured lobes, each having a small oblique point; these blossoms are produced in the summer months.

The species is a native of the Organ Mountains of Brazil, from whence it appears to have been first obtained for our gardens by Mr. Lobb, the botanical collector to Messrs. Veitch of Exeter: it was introduced about 1841. It belongs to the natural order Apocynaceæ.

In cultivation, this species of Dipladenia in common with the others requires stove temperature, and a moist atmosphere when making its growth; it is moreover much benefited by *mild* bottom heat, that is, heat applied to its roots. Being a strong grower, plenty of pot room must be allowed to obtain a good plant, but the pots must be thoroughly drained; a compost of equal parts turfy loam and peat, opened if necessary by the addition of sand, will be a proper medium for its roots. If grown in a pot, spiral training round a pillar trellis is most suitable; or should any devotee of flat, shield, or peacock's-tail trellises become possessed of the plant under notice, if he will but attempt to train it over one or other of these forms—it may help to lead him to a better taste in this respect. It may be increased by cuttings planted in sand, and placed in a mild hotbed, where they may be kept moderately close until rooted.



THE KITCHEN GARDEN.

Sow a few more peas and beans about Christmas.

Plant and transplant nothing unless the weather be very open and dry, when such as cabbages and even potatoes may be put in with safety.

General Directions.—Under this head may be included all that it is necessary to attend to. Persevere in draining, manuring, digging, trenching, and ridging the unoccupied ground. The wheeling of manure, soil, &c., should be always, if possible, done in frosty weather, and in the early part of the day. Spread the manure where there is any danger of the ground getting too hard; strawy litter may also be strewed over the celery ridges, the beds of young plants, and every place where frost is likely to do injury; the drier the material, and the looser it is put on, the more successfully will it resist the cold. The making and relaying of walks may be proceeded with. The thorough preparation of the ground for new plantations of asparagus, rhubarb, and seakale should now have attention; it should be trenched three feet deep and well enriched with manure, as seaweed, dung, sand, and fresh loam. Get a supply of labels and stakes ready for use when wanted. The brocoli must be often looked over, and the mature heads cut, and others secured from frost. The Brussels sprouts require the latter attention: do not think of cutting the tops off these too soon, as is sometimes done. The young cauliflowers should have the soil stirred about them, and air admitted freely when mild; the same with lettuce, &c. Look over the stored potatoes, carrots, onions, &c., and take out all those which are decaying; of course the latter operations suit wet weather. Turn anew the composts and ground in the open breaks when dry and frosty; and see that even winter-work be done tastefully.

THE FRUIT GARDEN.

General Directions.—Persevere with the winter operations until they are finished. The orchard, which is usually the last place of pruning, must not be skipped over. Take every tree seriatim as on the walls, and make it appear evident that the gardener has been over them: allow no branches to cross each other, nor to become rambling; make the tree as a whole look flat, open, and dwarf, as no form admits more sun to the fruit, nor is better adapted to withstand storms. Continue planting, and draining beforehand, seldom making a pit, for it is desirable that the roots be near the surface; attend to staking and tying them firm. The prunings may be all charred, and made again available in the soil, and the composts used for the trees. As much of the surface as possible should be exposed to the beneficial influences of frosty weather, by being frequently turned over.

THE FORCING GARDEN.

General Directions.—Everything being ready, the earliest houses may be shut up, giving a little air during the day, if sunny; use the syringe freely. Have every thing well secured from frost; and shrink from the idea of losing anything from carelessness: nevertheless covering may be, and is at times injurious; therefore, in many cases, it will be necessary to exercise skill in determining how to afford protection; when there is any risk it is best to err on the safe side.

Asparagus.—Temperature from 50 to 60 degrees. When in pits or frames give a little air about midday; prepare for a successional supply.

Cucumbers.—Temperature from 55 to 60 degrees by night, rising to 70 by sun heat. Keep the fruit and wood thin; syringe often if fire heat is much in request; otherwise it is necessary to guard against damp in this the darkest month. When there is no other convenience, a dung-bed seed-frame may be put up, and in this case sow early next month.

Figs.—Temperature from 50 to 70 degrees. This only applies to those in pits, which it is presumed are pretty forward; apply the syringe freely when fire heat is required, not otherwise.

Kidney Beans.—Temperature from 50 to 70 degrees. Sow for succession at the end of the month, either in pots or boxes; where there is plenty of room, plant three in a smallish pot. This will be found advantageous, as then they only require one other shift; give them all the light possible, and syringe them twice a day.

Melons may be forwarded in pots by being put near the glass, and having plenty of air and moisture, and a heat of 70 degrees; prepare a seed bed for cucumbers and them, and have the dung thoroughly sweetened by frequent turnings; common stable litter requires six weeks' preparation before it is in a proper condition for this purpose.

Mint, Tarragon, and other herbs, may be forced in boxes, placed either in the pine stove or early vinery, or where they will have about 55 degrees of heat and plenty of light; the roots can simply be lifted out of the ground, and forced at once.

Mushrooms.—Temperature from 55 to 60 degrees. This is one of the most useful houses at present, and every corner should be filled with such as rhubarb, seakale, and even asparagus: devote one corner to the increasing of spawn, by having some prepared strawy dung in a medium state of wetness and decay, amongst which thrust a few handfuls of loose spawn from the old beds; beat the whole firmly together, and in a few days it will be ready for distributing over the new bed. The spawn thus procured is equal to that made in bricks, and is more easily procured: a dry heat must never be found here.

Mustard and Cress.—Temperature 60 degrees. It will be found to grow best in old decayed tan; place it near the glass in such structures as the pine stove, and give it little water; if the house is moist and there is no sun it will require none.

Musas.—Temperature from 55 to 70 degrees. Continue with a low temperature to give little water; admit air when mild.

Oranges.—Temperature from 40 to 55 degrees. Keep sponging the dirty plants; and, if any transplanting is to take place, now is a good time; they delight in a loamy rich soil, well drained. Cut out all irregular branches, and pick off every yellow leaf as it appears.

Peaches and Nectarines.—Temperature from 45 to 55 degrees. Those in pots may be ready for disblossoming, if not disbudding, by the end of the month; the one is as useful an operation as the other: syringe freely, and maintain a steady heat. The early house may be started now by merely shutting it up closely at night, giving air daily, and putting a little fire in at the end of the month; syringe in the mornings, and shut up early.

Pine Apples.—Temperature from 55 to 70 degrees. See that none of the fruiting plants want water; keep up the heat in the pits and frames by covering up at night, renewing linings, &c. Use as little fire heat as possible; it may be requisite at times during the day, in order to give air: syringe occasionally in the mornings, but sparingly.

Rhubarb.—Temperature 55 degrees. Water that in the houses with tepid water; see that the heat is not strong about that which is being forced out of doors, as it is apt to draw very weak. The same may be said of seakale. At the end of the month a successional crop must be covered up.

Strawberries.—Temperature from 50 to 55 degrees. Syringe freely those advanced in growth, but give very little water to those newly brought in; keep all near the glass, and the house clean and healthful, by airing, watering and fumigating.

Vineries.—Those in pots when breaking should have a heat of 60 degrees at night, and 70 degrees or more by sunheat. Shut up the early house; bring in a quantity of fermenting manure, or leaves and dung mixed; syringe freely in the middle of the day, and shut up early. Have the late houses pruned soon.

FLOWER GARDEN AND SHRUBBERY.

Plant and transplant as the weather permits.

General Directions.—When no great alterations are being effected, a tidiness and freshness must characterize the whole: indeed, the shrubbery should be very lively, aye "clothed in living green," whilst the Christmas Rose, the Arbutus, the Laurustinus, the Caprifolium, &c. will make it cheerful to walk in. The flower garden now must occupy much thought; it is well to have a plan, so arranged as to be a guide in determining what plants will be wanted to fill the beds next year. Have the cutting frame or pit early in operation. Neither waste time nor space in increasing plants for this object, merely because they are new; they must have bright colours, good habits, or strong odours, before they can be worthy of being substituted for many of the bedding-out plants now common. A little thought on this matter will show that justice has not been done to many things which are not new, but possessed of properties which with proper attention and being put in masses, have a fine effect. The protection of tender plants, the sweeping and rolling of the lawn, wheeling and turning composts, and digging-in the same, also a general pruning of the evergreens, if not done, should be proceeded with. Nothing can be added by way of detail further than this, that the sooner bulbs, shrubs, and hardy herbaceous plants are in the position they are to flower in, the better.

WINDOW GARDENING.

In case of severe weather even the hardiest shrubs and evergreens will be benefited by protection, either afforded by removal into the house, or by the fitting of canvass or other screens over the balconies or other situations in which they are placed. Every plant not perfectly hardy must be kept under cover in all but the finest weather, when there is no frost, in which case they should have all the air they can get; and such a time should also be taken advantage of to wash and clean such as are getting dusty or dirty. Water may also be rather freely applied at such times, but it should always be done early in the morning. If any of the plants get frosted, remove them to a shady situation the first thing in the morning, and syringe them well with *cold* water.

Bulbs, such as hyacinths, crocus, &c., should be brought forward regularly in a warm place to succeed those previously advanced. The single hyacinths will be found the best for early forcing; the double varieties being generally much later in flowering.

Begonias.—Still keep the bulbs in a state of rest, allowing no moisture—unless they shrivel too much.

Camellias.—Increase the quantity of water to such as are advancing, but be careful not to apply too much; a few more may be advanced in the same way as pointed out last month.

Cinerarias.—Allow some of the most forward to shoot up for flowering, giving all the air the weather will allow. Water cautiously in gloomy weather.

Fuchsias.—Maintain these in a dry state of rest, applying no water unless absolutely necessary.

Geraniums.—Still keep these as dry as practicable, guarding against frost, by which they are soon destroyed: cover them up well, if no fire can be made near them, but mind they do not get too dry if the fire heat be long continued.

Myrtles and similar evergreens should have all the air the state of the weather will permit, and should be often examined to see that they do not suffer for want of water.

Roses.—The Chinese varieties should be continued in a warm place, giving them all the air possible, and using water with great caution.

Primulas.—Protect from cold, keeping the plants rather dry in damp gloomy weather. Give a slight shift to any that may require it, and water very cautiously for a time afterwards.

Violets.—Attend to previous directions, and be very particular in the application of moisture.

Wardian Cases.—Guard against damp and frost. The latter would do much damage even to common hardy plants if it once penetrate to them when placed in such conditions as those they are exposed to in these cases. It is therefore advisable to keep the plants and the earth in which they grow in as dry a state as their well-being will permit. But they should not be liable to be affected by frost; all moveable cases should be put safely under cover during night and unfavourable periods; and such as are stationary outside the house should be well protected by mats from the severity of the weather. In order to keep the plants dry and healthy, air should be given as often as possible, and they should be also examined at the same time, and insects, dead leaves, &c. removed as often as necessary.

PITS AND FRAMES.

The principal operations will consist in providing means to resist the increase of cold, and to prevent the effect of damp on the plants, by means of airing and the occasional use of fires in such of the pits as are constructed for that purpose.

Annuals.—Give air by tilting the lights whenever the weather permits, and use water only where absolutely necessary, and then in very small quantities; remove the covering every day except in the most severe weather, to keep the plants from drawing up weak and becoming blanched.

Half hardy plants, as calceolarias, petunias, verbenas, &c.—Maintain a dry atmosphere by the applying very little water, free ventilation, and the occasional use of fires to dry the pits. Cover up early in the afternoon, and never allow the mats or other material used to remain over the plants two days together if it can be avoided.

Forcing Pit.—Keep up a medium temperature, if anything a little higher than last month, giving air on all favourable occasions, and closing up early. Water sparingly in dull weather. Keep up the supply of roses and other shrubs by introducing fresh batches of them once or twice during the month, and remove such as are far enough advanced to the conservatory. Also bring forward fresh batches of hyacinths and other bulbs; and a few pinks, violets, lilies of the valley, &c. may be forwarded, observing to excite them very slowly at first.

THE GREENHOUSE.

Temperature.—From 40 to 50 degrees by day; and from 36 to 40 degrees by night.

Ventilation.—Give air on all fine days when not too cold, taking advantage of such times to dry the house with a little extra fire if the weather has been dull. Use as little fire at night as is possible, consistent with the safety of the plants.

Watering.—Attend to previous directions, applying moisture with the greatest circumspection at this dull period.

Potting.—Avoid shifting the plants except where absolutely necessary, as the new soil round the roots is apt to be injurious, especially if it gets too damp. All bad weather should be taken advantage of to wash and sort dirty pots, and collect crocks and drainage. A good supply of these various articles should always be kept at hand in a dry place.

Soils.—Turn over compost heaps in dry frosty weather, exposing the interior to the action of the weather, and carefully picking out all grubs or other insects. Ridge the heaps up neatly, so as to save the mould from being too much washed by heavy rains.

Dressing.—Keep a steady eye on the neat appearance of the house and plants, and restake and label any that may require it. Sticks and labels may also be prepared in bad weather, and be sorted and put by ready for use when required.

Insects.—Look well after all insects, especially green fly if the house receives much fire heat, when they will soon begin to increase too fast.

Aloes and succulents generally, should still be kept dry, and not allowed to start in growth until the days begin to draw out considerably. Give very little water, just enough to keep them from shrivelling.

Agaves and larger succulents should be treated as before recommended, receiving little or no water.

Alströmerias should still be kept cool and quiescent. A cold frame not too damp is the best situation for them. Give all the air consistent with keeping the frost from the tubers.

Annuals, such as are kept in the house, should enjoy as much air and light as possible, and such as are growing too fast may be topped in order to get them bushy. Water only when thoroughly necessary.

Azaleas.—Maintain a succession of flowers by placing a few more plants in warmth, and remove such as are sufficiently advanced to the conservatory. Water rather freely as the plants begin to grow.

Calceolarias—Keep these plants cool and airy, but beware of stagnant water or soddened mould about their roots.

Camellias.—Keep up the succession of blooming plants by placing a few more in a slight heat, and increase of moisture; remove such as are expanding their flowers to a warm part of the conservatory.

Cape Bulbs, as ixias, gladiolus, &c. must still be kept dormant, in order to enable them to push with the greater vigour when potted and excited in the spring.

Cephalotus follicularis (New Holland pitcher-plant).—Keep it protected from damp by raising the bell-glass, and allowing the superfluous water about the roots to drain freely away.

Cinerarias.—Forward such as require it by shifting, and place a few more of the most forward in heat, to keep up a succession of bloom. Water frequently; a little clear manure-water may be used in fine weather.

Chrysanthemums.—Continue to remove the plants from the house as they become shabby, and protect them in the best manner available; water regularly such as are still retained in the house.

Crassulas, and allied plants, as sempervivum, should still be kept in a light dry exposure, and scantily watered.

Cyclamens.—Encourage such as are growing by placing them in a light airy situation, and watering regularly but not too copiously.

Epacris.—A few plants may be placed in a slight heat, and the supply of water be gradually increased; keep the others cool and airy.

Ericas.—Maintain the freest ventilation consistent with the safety of the plants from frost; water just sufficiently to keep the roots in an equable moist state, and also to guard against any excess of moisture either at the roots or anywhere in the house. Never use fire to these plants unless in cases of absolute necessity, and then ventilate freely.

Fuchsias.—Still keep these in a state of rest, unless any are wanted to propagate from, when they may be gradually excited, so as to furnish cuttings in a month or two.

Gompholobiums and slender creepers should be kept as previously recommended, great care being taken to prevent danger to the roots by over watering.

Haworthias, Apicras, &c. — Keep these plants still in a dry state, using water only when necessary to keep them alive.

Helichrysums.—Water carefully and preserve the plants from damp and cold.

Leschenaultias.—Keep these in a dry place, and use water with great caution, in order to prevent the decay and death of the plants by piecemeal.

Lilium japonicum (Japan lily). — Keep these roots still dormant, as the growth they could make during the present dull weather could hardly produce a fine bloom.

Mignonette.—Keep all the plants in a cool dry situation, watering with great caution. Trim up the tree mignonette as previously recommended, and guard against green fly.

New Holland plants, as acacias, hoveas, bossiæas, &c. should still be kept cool and airy, and should be regularly and very carefully watered. A few small plants of *Acacia armata* may be placed in the forcing-house, and gradually brought forward.

Orange trees.—Water carefully and give plenty of air. A few of the smaller plants may be placed in heat for the sake of their fragrant blossoms.

Oxalis.—Keep these dry and as dormant as possible; even the stemmed species require very little water now.

Pelargoniums.—Maintain these in a gently growing state, giving air as often as possible to prevent their drawing up weakly, and stop and regulate the branches, using as few sticks for supports as possible. Water regularly but not too freely yet. Introduce a succession to the forcing-house as often as necessary.

Primulas.—Shift such as require larger pots, and remove the flowers from such plants as are wanted very strong to flower late in the season. Keep the plants rather moist and airy, removing all damp or decaying leaves as soon as they change.

Proteas, Banksias, Dryandras, &c.—Continue these in a light airy place, watering with great caution.

Rhododendrons. — Continue the previous treatment, using water with circumspection. Introduce a few more to the forcing-house, and remove those sufficiently advanced in bloom to the conservatory. Increase the allowance of water to such as are being forced.

Roses.—Any of the Chinese or allied sorts about to flower should be encouraged by a warm berth, and an increased supply of moisture. Those turned out in the house should not be excited yet, but be kept rather cool and dry.

Salvias.—See former directions. All the sorts should be kept as dry as possible at the root, so long as they do not perish.

Stapelias should be kept dormant until the spring is well advanced, as any growth they may make during winter will be far too weak to form stout flowering branches.

Tropæolums.—Continue to carefully train those that have started, covering the bottom of the trellis well in the first instance. Water carefully, keeping the mould in a regular damp state, by no means soddened. Place the plants where they will get the full advantage of light and air, and not be liable to be drawn into a weak straggling growth.

THE CONSERVATORY.

Temperature.—About 55 degrees by day, and from 45 to 50 degrees by night. Apply fires in cold weather if the above heat cannot be maintained without.

Ventilation.—Give air on all favourable opportunities, avoiding all strong draughts, and closing the house early in the afternoon.

Watering.—Use water sparingly, but do not allow any plants to suffer for want of it. Plants in flower, especially those brought in from the forcing-pit, will of course require most, but it must be given cautiously even to these in gloomy weather.

Arrangement.—Alterations in the grouping of the plants should be constantly studied, and different effects tried, so as to arrive at a knowledge of the arrangement best suited to the house. At this season an excellent effect may be produced by introducing baskets, vases, &c. at the intersections of the walks or in similar places, filled with hyacinths and other bulbs. One mass of bright colours seen thus is more effective than double the number of plants stuck about among those not in bloom.

General Directions.—Attend to what has been said under this head in previous months. At this dull season the opportunity should be taken to search the plants for scale and other insects, and no pains should be spared to thoroughly extirpate them. Similar bad or broken weather should also be employed in providing a good supply of stakes and tallies of proper sizes, and also to use them when requisite. All permanent and large labels should also be renewed or repaired, as the time can be better spared now to have them done neatly, than if they are left to a more busy season.

THE PLANT STOVE.

Temperature.—About 60 degrees by day, and about 50 degrees at night.

Ventilation.—Great care is necessary in the admission of air; the requisite temperature must be maintained, and even then all strong draughts must be strictly avoided. A regular fire will be necessary; and by using this rather briskly in the morning, sufficient air may be given without detriment to the plants, observing to close the house early.

Watering.—Always use water of the same temperature or rather higher than that of the house, so that when applied the roots of the plants may not be chilled by a stream of cold water passing over and among them. Use water very sparingly, especially in dull cold weather.

Potting.—Shift only such as absolutely require it, but provide a proper supply of pots, composts, crocks, &c. to start with when the time for more active exertions arrives.

Insects.—Always bear in mind the reiterated necessity of constantly waging war upon all descriptions of injurious insects, and act accordingly.

Achimenes.—Keep up the succession by exciting another batch of roots this month, and steadily encourage the advance of those already growing, by placing them in a warm place near the glass, so as to receive all the light the season affords.

Allamanda, *Beaumontia*, *Echites*, and all strong growing climbers, should be pruned as far as requisite while in a state of rest, so as to avoid the bleeding of the wounds, which takes place copiously if they are cut when growing.

Alpinias, *Hedychiums*, and other reedy plants, should be kept at rest, removing the foliage as it decays, but giving very little water until it is necessary to start them again.

Aphelandras, *Justicias*, *Ruellias*, &c.—Cut down such as go out of bloom, and gradually withhold water and heat as they show symptoms of rest.

Amaryllids.—Only encourage growth in such as throw up the flower stems: these should be kept rather moist as they advance.

Begonias.—Adhere to last month's directions, and use water with caution even to any that may be growing freely.

Burchellia.—Advance those steadily which were placed in heat last month, but keep the others cool and at rest.

Cacti.—Introduce a few more to the forcing pit, and remove those sufficiently advanced to a warm part of the conservatory; keep the others dormant.

Cinnamomum (Cinnamon tree).—Guard carefully against excess of moisture, and keep the plants warm.

Clerodendrons.—About the end of the month a plant or two may be potted in fresh rich soil, and gradually excited, giving little water at first, but supplying it abundantly as the plants advance, using manure-water occasionally. Syringe frequently, and guard against mealy bug and green fly. The other plants should still be kept dormant.

Climbers.—Continue last month's directions until all are properly done, and gradually increase the amount of water to such as commence growing.

Daturas.—Continue to rest the majority of these. Eyes of the old wood should be potted in light sandy soil, and plunged in a brisk bottom heat: when rooted they should be potted singly in a free rich soil, and grown away rapidly, syringing and giving abundance of water as they advance.

Erythrinas.—Start an old plant in bottom heat, and thin out the shoots as soon as firm enough to put in as cuttings, treating them in a similar way to the daturas.

Euphorbias.—Adhere to last month's directions in the case of these plants.

Ferns.—Keep them comparatively dry and airy, in order to correct any tendency to damp off.

Gardenias.—Steadily increase the heat and moisture to plants growing freely, and introduce another lot, removing any sufficiently advanced to the warmest part of the conservatory.

Gesneras, *Gloxinias*, &c.—Grow those in activity as vigorously as the season will allow; and start a few more to keep up a succession.

Hippeastrums, *Crinums*, *Pancratiums*, &c.—Encourage the development of any that may throw up their flower stalks by increased heat and moisture.

Ipomæas.—Do nothing to excite any of these into growth at this dull season, but keep them cool and dry.

Ixoras.—Keep the best plants in a state of rest; one or two may be placed in heat and gradually advanced.

Jasminums, *Rondeletias*, *Brunfelsias.*—Keep those growing freely which were introduced last month, and put in a succession.

Lantanas.—Keep at rest and cool. If large specimens are wanted, some strong young plants may be started, and the shoots occasionally stopped to obtain a bushy plant.

Luculia gratissima.—Do not encourage too free a growth in this plant yet; water sparingly.

Lycopodiums must get no more water than necessary to keep them fresh and green.

Malvaceous Plants, as hibiscus, should be kept in a state of perfect rest for some time to come.

Manettias, and other tender climbers, should be kept in a cool, dry and airy place, and receive only sufficient water to keep them from dying down.

Melastomas.—See last month's directions, which may in this case be followed.

Melo-Cacti must still be kept dry and in a free circulation of warm air; water only to prevent shrivelling.

Musas.—Guard against damp in the heart of the plant, and also against spots on the leaves, by keeping up a dry atmosphere.

Nepenthes (Pitcher-plant).—Still maintain a warm and comparatively dry atmosphere about the plant.

Neriums.—Introduce more to the forcing house, and remove such as are forward enough to the conservatory. They require a liberal supply of water when growing.

Nymphæas (Water lilies).—Still keep the roots rather dry, and in a rather low temperature.

Palms.—Keep as previously directed.

Thunbergias.—The perennial sorts should still be at rest, as any growth made now would only weaken the plants.

Vincas.—A few may be placed in a warm house and their shoots be allowed to grow; they will soon be in full flower.

THE ORCHID HOUSE.

Temperature.—The warm house for the Indian species 65 to 70 degrees by day, 55 to 60 degrees at night; the cool, or Mexican house, 60 degrees by day, and 50 degrees at night. Rather lower than this in clear frosty weather.

Ventilation.—Very little air can be admitted to either of the houses now, and when air is given the ventilators ought to be covered with canvass, close wove wire, or similar material; and they ought to be so placed that the cold air must pass over the pipes or other heating apparatus.

Watering.—Very little water will be required about the plants; steaming the houses in the morning when the weather is fair will be as much as will be necessary in that way. Plants in a growing state should be occasionally watered with great care, and always soon enough in the day to allow them to dry externally before the evening.

Insects.—The same unremitting search after and destruction of all sorts of injurious vermin must be kept up.

Potting.—Attend to this before any of the plants advance too far in their growth, as it can hardly be done at such a time without material damage to the roots.

Soils.—Keep a sufficient stock in-doors in the dry to meet the demand; never using any until it has acquired the temperature of the house in which it is to remain.

Imported Plants should be treated as advised last month.

Aërides, Saccolabium, and Vanda.—Keep these in a state of rest, applying water very cautiously.

Cymbidiums.—If rested for a time the slightest increase of heat and moisture is generally sufficient to excite these plants to produce their flowers, when they should receive an additional supply of water.

Cattleyas.—Maintain these in a cool airy temperature, applying very little water until the flower spikes appear, when the heat and moisture must be increased.

Dendrobiums.—Keep these in a state of rest, as before recommended.

Oncidiums.—Continue these in a state of rest, being careful that no drip or other moisture lodges among the leaves.

Stanhopeas.—A cool rest should be continued to these until the season advances or until they show bloom, when the heat and moisture should be increased about them.

BOTANICAL TERMS,

CHIEFLY APPLIED TO EXPRESS COLOUR, VARIEGATION, OR VEINING.

Æruginosus; verdigris-green, a deep green slightly mixed with blue.

Albescens; turning white, changing to whitish from some other colour.

Albidus; whitish, a soiled white.

Albus; white.

Alutaceous; whitish yellow.

Amethystinous; violet-coloured.

Anastomosing (*anastomozans*); this term is used when the ramifications of anything—as the veins of the leaf—are united at the points where they come in contact.

Anthracinus; coal-black, a little verging towards blue.

Argenteus; silvery, white changing to bluish grey, with a metallic lustre.

Argo-; in composition means pure white.

Armeniacus; apricot-coloured, rather less red than orange-coloured.

Ater; pure black, without any admixture.

Atratus, nigritus; used when a portion of any body is black.

Atrovirens; deep green, verging towards black.

Aurantiacus, aurantius; orange-coloured, yellow mixed with red.

Aureus, auratus; golden-yellow, pure bright yellow.

Azureus; sky-blue, a lively blue, pure and light.

Badius; chestnut-brown, dull brown tinged with red.

Blanched; made white by being grown in the dark.

Brunneus; a deep pure dull brown, nearly the same as umber-brown.

Cæsius; lavender-coloured, a pale blue intermixed slightly with grey.

Calcareus; same as *cretaceus*.

Candidus; pure white, but not so clear as snow-white.

Canus; hoary; this is caused by white hairs overlaying a green surface; *canescens* is somewhat hoary.

Carneus; flesh-coloured, a paler red than rosy.

Cerascinous; deep red, cherry-coloured.

Cerinus; waxy yellow, dull yellow with a slight admixture of red-brown.

Cervinous; dark tawny, deer-coloured.

Chloro-; in composition means green.

Chryso-; in composition means golden.

Cinereus; ash-grey, an intermediate mixture between pure white and pure black; *cineraceus* is the same, but somewhat whiter.

Cinnabarinus; cinnabar-coloured, scarlet somewhat intermixed with orange.

Cinnamomeus; cinnamon-coloured, bright brown mixed with yellow and red.

Citreus, *citrinus*; lemon-coloured, the most pure yellow without brightness.

Coccineus; scarlet, pure carmine slightly touched with yellow.

Cæruleus; a blue less dense and clear than indigo-blue, that is, lighter and duller.

Concentric; applied to lines when arranged at an equal distance from a common centre.

Coracinus; raven-black, black with a strong lustre.

Costatus; ribbed; the same as *nervosus*.

Cretaceus; chalk-white, dull white, somewhat greyish.

Croceus; saffron-coloured, deeper than orange, with a dash of brown.

Cupreus; copper-coloured, brown-red with a metallic lustre.

Cyaneus; clear bright blue.

Cyano-; in composition means blue.

Dealbatus; whitened, covered slightly with white on a dark ground.

Discoidalis; discoidal; when a single large spot of colour is situated in the midst of some distinct colour.

Draconis; spotted like a serpent.

Eborinus; same as *eburneus*.

Eburneus; ivory-white, cream colour, white verging to yellow.

Fasciatus; banded, when transverse stripes of one colour cross another.

Ferrugineus; rusty, light brown with a mixture of red.

Flammeus; flame-coloured, a fiery red, or very lively scarlet.

Flavovirens; yellowish-green, green a good deal intermixed with yellow.

Flavus, *flavidus*, *flavescens*; pale yellow, pure but paler than *luteus*.

Fuligineus, *fuliginosus*; sooty, dirty brown verging to black.

Fulvus; tawny, dull yellow mixed with grey and brown.

Fumeus, *fumosus*; smoky, grey changing to brown.

Fuscus; brown tinged with greyish or blackish.

Gilvus; Isabella-yellow, dull yellow mixed with grey and red.

Githagineus; greenish red.

Glaucus; sea-green, dull green with a greyish-blue tint; *thallasicus* and *glaucescens* are synonymous terms.

Grammicus; lettered, when the marks of colour have the appearance of letters.

Griseus; pearl-grey, pure grey tinted with blue.

Guttatus; spotted, when colours are disposed in small spots or dots.

Gypseus; same as *cretaceus*.

Hæmatiticus; same as *rubiginosus*.

Helvolus; greyish yellow mixed slightly with brown.

Hepaticus; liver-coloured, dull brown mixed with a little yellow.

Ianthinus; violet-coloured, same as *violaceus*.

Igneus; flame-coloured, same as *flammeus*.

Incarnatus; flesh-coloured, same as *carneus*.

Indigoticus; deep—the deepest—blue, indigo-coloured.

Kermesinus; carmine, pure red without admixture.

Lacteus; milk-white, dull white verging to blue.

Lateritius; brick-red, vermilion mixed with grey.

Leuco-; in composition means white.

Lilacinus; dull violet mixed slightly with white, lilac-coloured.

Limbatus; bordered, when one colour is broadly margined by another.

Luridus; lurid, dirty brown somewhat clouded.

Luteolus, *lutescens*; same as *flavus*.

Luteus; yellow, clear yellow, the colour of gamboge.

Maculatus; blotched, when colours are disposed in broad irregular patches.

Marginatus; edged, differs from *limbatus* in having a narrower margin.

Marmoratus; marbled, when colours are disposed in irregular veins.

Melano-; in composition means black.

Meleagris; freckled, speckled.

Memnonius; brown-black, scarcely distinguishable from *piceus.*

Miniatus; vermilion-coloured, scarlet decidedly intermixed with yellow.

Mottled; marked with blotches of colour of unequal intensity.

Murinus; mouse-coloured, grey with a tint of red.

Nebulosus; clouded, when colours are irregularly blended.

Nervosus, nervatus; ribbed, having three or more ribs or longitudinal vein-like lines, as in the leaves of the rib-grass (*Plantago lanceolata*).

Niger; black a little tinted with grey; *nigrescens* is nearly the same.

Niveus; snow-white, the purest white.

Ocellatus; when a broad spot of one colour has a smaller spot of a different colour within it.

Ochraceus; ochre-coloured, yellow slightly mixed with brown; *ochroleucus* is the same, but whiter.

Olivaceus; olive-green, green intermixed with brown.

Piceus; pitch-black, black tinged with brown.

Pictus; painted, when colours are disposed in streaks of unequal intensity.

Phæo-; in composition means brown.

Phœniceus; a pure lively red, almost the same as *kermesinus.*

Plumbeus; lead-coloured, differing from slate-grey in having a metallic lustre.

Porphyreus; brown mixed with red.

Prasinus; grass-green, a clear lively unmixed green colour.

Prasinate; of a green colour.

Punctatus; dotted, when colours are disposed in very small round spots.

Puniceus; carmine, same as *kermesinus.*

Purpureus; purple, dull red slightly intermixed with blue.

Rectinervis; straight-ribbed; when the veins are parallel or nearly so, and running from the base to the apex, as in grasses.

Rhodo-; in composition means rosy.

Roseus; rosy, a pure pale red.

Ruber; red: *rubescens, rubellus, rubens, rubicundus,* &c., are varieties of this, and are applied to different tints of any pure reds.

Rubiginosus; brown-red, a dull red slightly mixed with brown.

Rufus, rufescens; rufous, redder than *porphyreus.*

Rutilans, rutilus; bright red, with a metallic lustre.

Sanguineus; blood-coloured, dull red with a brownish black tint.

Schistaceus; slate-grey, grey with a tint of blue.

Spadiceus; a pure and very clear or bright brown.

Stramineus; straw-coloured, dull yellow mixed with white.

Sulphureus; sulphur-coloured, pale lively yellow mixed with white.

Tessellatus; tessellated, when colours are arranged in small squares like a tessellated pavement.

Testaceus; brownish yellow, like unglazed earthenware.

Trinervis; three-ribbed, the whole three proceeding from the same base. If any different number of ribs is present, it is expressed by the combination of the equivalent Latin numeral, with *nervis;* thus, quiquenervis is five-ribbed, and so on.

Uninervis; one-ribbed, this is the condition of most leaves, having one principal rib.

Variegatus; variegated, when colours are disposed in irregular wavy spaces.

Violaceus; violet-coloured, blue intermixed with red.

Viridis; clear green, but less bright than grass green. The different tints of this colour are distinguished by the terms *virens, viridescens, viridulus, virescens,* &c.

Vitellinus; yolk-of-egg-coloured, dull yellow slightly mixed with red.

Vittatus; striped, when longitudinal stripes of one colour cross those of another.

Xantho-; in composition means yellow.

Xerampelinus; dull red, with a decided admixture of brown.

Zonate; having a dark belt in the shape of a horse-shoe.

Zonatus; zoned, similar to *ocellate,* but with more numerous concentric bands of colour.

Zones; stripes or belts of colour.

TERMS CHIEFLY APPLIED TO ESTIVATION, DIRECTION, AND INSERTION.

Accrete (*accretus*); grown together or united with some other body.

Adnate (*adnatus, annexus*); adhering to the face of any body; usually applied to the anthers.

Adhering (*adherens*); united to another body laterally by the whole surface.

Aduncous (*aduncus*); hooked, bent back, or crooked.

Alternative (*alternativa*); a mode of estivation in which the parts are in two rows, and alternate in their position, so that the parts of the outer row each overlap half of two parts of the inner row.

Amphitropal (*amphitropus*), applied to the embryo of the seed, when curved round the other substance of the seed.

Amplectans; embracing, clasping with the base.

Amplexicaul (*amplexicaulis*); stem-clasping, similar to *amplectans,* but applied only to stems.

Antitropal (*antitropus*); applied to the embryo of the seed when it is straight, and lies in a direction opposite to that of the axis of the seed.

Anterior; seated or growing in front of some other body.

Appendiculate (*appendiculatus*); when a body is furnished with appendages or other parts which are not essential to the idea of the original body.

Appressed (*appressus*); pressed closely to anything, as hairs to the stem, or leaf, &c.

Approximate; approaching near together, in close connexion with.

Articulated (*articulatus*); when one body is united with another by a manifest articulation or joint.

Assurgent (*assurgens*); ascending, when a part has an upward tendency, or a direction upwards, with an oblique base.

Axillary (*axillaris*); arising from the axils of the leaves.

Basal (*basilaris*); fixed to the base of any body.

Brachiate (*brachiatus*); applied to ramifications when they proceed from a common axis, nearly at right angles, and alternately in opposite directions.

Cauline (*caulinus*); arising from the stem.

Caudicula; a small membranous process on which the pollen of orchids is situated.

Celsus; upright, of stately growth, tall.

Cernuous (*cernuus*); drooping, inclining from the perpendicular, so that the apex points to the horizon.

Circinate (*circinatus, circinalis*); a mode of vernation when the leaves are rolled spirally inwards; also applied to any part bent in the same way (like the head of a crosier), as the young fronds of ferns.

Climbing (*scandens*); applied to stems which being too weak to grow erect, attach themselves to other plants or other bodies for support, as in the vine, ivy, &c.

Coadnate (*coadnatus, coherens, confluens*); cohering, running together, the fastening together of homogeneous parts.

Coarctate (*coarctatus*); pressed together.

Cochlear (*cochlearis*); a form of estivation in which one piece being larger than the other, and hollowed out like a hood, covers all the other, as in the aconite.

Concrete (*concretus*); formed into one mass, joined together.

Condensate (*condensatus*); bundled, growing close together.

Conduplicate (*conduplicata*); a form of estivation, or vernation, when the sides are applied in a parallel direction to their faces.

Conferruminate; united together so as to be undistinguishable.

Conglutinate (*conglutinatus*); glued together into one mass.

Connate (*connatus*); when the bases of opposite leaves are united round the stem.

Connivent (*connivens*); convergent, having a gradual inward direction.

Contorted (*contorta*); a mode of estivation resembling that called *twisted*, but in this the parts are oblique in figure.

Convolute (*convolutiva, convoluta*); a form of estivation or vernation, when the one part is wholly rolled up in another.

Creeping (*reptans*); applied to stems which being too weak to grow erect, and not having organs enabling them to lay hold on surrounding plants or objects, extend along the surface of the earth and send down roots at intervals; this is the same as *trailing*.

Crowning (*coronans*); situated on the top or crown of anything.

Curvative (*curvativa*); a form of estivation or vernation, in which the margins are slightly curved, without being twisted.

Declinate (*declinatus, deflexus*); deflexed, bent downwards.

Decumbent (*decumbens*); reclining upon the earth, and rising at the point, as in many stems.

Decurrent (*decurrens*); prolonged below the point of insertion in a direction downwards.

Decursive (*decursivus*); same as *decurrent*.

Deflexed (*deflexus*); bent in a downward direction.

Dependent (*dependens*); hanging downwards, or having a downward direction in consequence of weight; nearly the same as *pendulous*.

Descendens; having a gradual downward direction.

Diffuse (*diffusus*); spreading in a remarkable degree.

Divaricate (*divaricatus*); straggling, branching out irregularly, but nearly at a right angle, as in some stems.

Divergent (*divergens*); growing widely asunder, or having a tendency to do so.

Dorsal (*dorsalis*); fixed to the back of anything.

Embracing (*amplectans*); clasping with the base; mostly applied to leaves.

Epigeous (*epigæus*); growing close upon the surface of the earth.

Epigynous (*epigynus*); growing on the summit of the ovary; applied to the position of the stamens.

Epiphyllous (*epiphyllus, foliaris*); inserted or growing upon the leaf.

Equitant (*equitans*); a mode of vernation in which the edges of the leaves overlap each other alternately without involution, as in the iris.

Erect (*erectus*); upright, pointing towards the zenith.

Estivation; a term applied to the manner in which the parts of the flower are folded when unexpanded—analogous to the *vernation* of leaves.

Evolved(*evolvus*); unfolded, fully developed.

Excurrent (*excurrens*); when the axis remains always in the centre, the other parts being regularly disposed round it, as the stem of the spruce fir.

Exserted; a good deal projecting beyond some other body; thus in such flowers as the Fuchsia, the stamens are said to be exserted.

Extrorse (*extrorsus, posticus*); turned outwards, or away from the axis to which it belongs.

Flexile (*flexilis*); easily bent, pliable.

Flexuose (*flexuosus*); applied to any part which alternately bends slightly inwards and outwards, that is, in opposite directions.

Floral (*floralis*); belonging to the flower.

Fluitant (*fluitans*); floating, lying or floating on the surface of water, as the leaves of the water-lily, and many other aquatics.

Free; apart, separate, unconnected.

Gyrate (*gyratus*); the same as *circinate.*

Homotropal (*homotropus*); applied to the embryo of the seed, and differing from orthotropal in the embryo not being straight.

Horizontal (*horizontalis*); applied when the plane of any part presents to the zenith, and the apex to the horizon, as in the case of most leaves.

Humifuse (*humifusus*); same as *procumbent.*

Hypogeous (*hypogæus, subterraneus*); subterranean, growing beneath the surface of the earth.

Hypogynous (*hypogynus*); growing from below the base of the ovary; applied to the position of the stamens.

Imbricate (*imbricata*); applied in estivation and vernation, when the parts overlap each other at the margin in a parallel manner, without any involution.

Immersed (*immersus*); buried, applied to the leaves of aquatics when they grow entirely under water.

Inclaudent (*inclaudens*); remaining open and unclosed.

Induplicate (*induplicativa*); a form of estivation or vernation having the margins bent abruptly inwards, and the external face of these edges applied to each other without any twisting.

Inflexed (*inflexus, incurvus, infractus*); bent or curved in an inward direction.

Innate (*innatus*); adhering to the apex of any body.

Inundated (*inundatum*); submersed, growing under water.

Introrse (*introrsus, anticus*); turned inwards, or towards the axis to which it belongs.

Inverted (*inversus*); when the apex of one part is in an opposite direction to that of another; the embryos of many seeds are inverted.

Involute (*involutiva, involuta*); a form of estivation or vernation when the edges are rolled inwards spirally on each side; applied also to leaves and other parts when rolled inwards.

Lateral (*lateralis*); fixed to the side of any body.

Marginal (*marginalis*); fixed to the edge of any body.

Natant (*natans*); swimming, floating under water, as many of the algæ.

Nodding (*nutans*); inclining so far from the perpendicular that the apex is directed downwards.

Oblique (*obliquus*); applied when the margin of any part points to the zenith, and the apex to the horizon, as the leaves of protea.

Obvolute (*obvolutiva, obvoluta*); a form of estivation or vernation when the margins of one part alternately overlap those of that which is opposite to it.

Orthotropal (*orthotropus*); applied to the embryo of the seed, when it is straight and has the same direction in respect to the axis as the seed itself.

Patent (*patens*); spreading, having a gradual direction outwards.

Peltate (*peltatus, umbilicatus*); fixed by the centre, or by some point distinctly within the margin, as in the leaf of tropæolum.

Pendulous (*pendulus*); hanging in a downward direction from natural inability to grow erect.

Perfoliate (*perfoliatus*); when the lobes at the base of an amplexicaul leaf are united quite round the stem.

Perigynous (*perigynus*); growing upon some body that surrounds the ovary; applied to the position of the stamens.

Peritropal (*peritropus*); applied to the embryo of the seed, when directed from the axis towards the horizon.

Petiolar (*petiolaris*); inserted upon the petiole or leaf-stalk.

Plaited (*plicativa, plicata*); a form of estivation or vernation, in which the parts are folded lengthways in the same manner as the plaits of a fan.

Prefloration; the same as *estivation.*

Procumbent (*procumbens*); spreading on the surface of the ground.

Proliferous; this term is usually employed when the inflorescence bears shoots or leaves instead of flowers; also, when a flower protrudes other flowers from within its own disc, as in the hen-and-chickens daisy.

Pronus; prostrate, lying flat.

Propendent (*propendens*); hanging in a direction inclining both forwards and downwards.

Prostrate (*prostratus*); lying flat on the ground.

Quincunx (*quincuncialis*); a mode of estivation in which the parts are five in number, —two exterior, two interior, while the fifth covers the interior with one margin, and has its other margin covered with its exterior; this occurs in rosa.

Radical (*radicalis*); arising from the root.

Rameous (*rameus, ramealis*); belonging to the branches.

Reclinate (*reclinata*); a mode of vernation when the leaves are bent down upon their stalk; also applied, with *inclinate* and *declinate*, to any thing falling gradually back from the perpendicular.

Recumbent (*recumbens*); prostrate, lying flat.

Replicate (*replicativa*); a form of estivation or vernation in which the upper part is curved back and applied to the lower.

Resupinate (*resupinatus*); inverted, as compared with the normal position, by the natural twisting of the stalk, so that the part looks to be upside down; it is the case in the flowers of some orchids and other plants.

Retrorse (*retrorsus*); turned backwards, or in an opposite direction to the apex of the part to which it appertains.

Revolute (*revolutiva, revoluta*); a form of estivation or vernation, when the edges are rolled backwards spirally on each side; applied also to leaves and other parts when rolled backwards.

Secund (*secundus*); one-sided, having all the parts turned in one direction in consequence of the stalks being twisted.

Sessile (*sessilis*); stalkless, and sitting close on the body to which it is attached.

Spiral (*spiralis*); twisted in the manner of the corkscrew; some flowers are thus arranged in reference to their axis.

Straight (*rectus*); not devious, wavy, or curled; *strictus* is applied to anything remarkably straight.

Submersed (*submersus, demersus*); fixed beneath the surface of water.

Supervolute (*supervolutiva*); a form of estivation or vernation, when one edge is rolled inwards, and is enveloped by the opposite edge rolled in an opposite direction.

Terminal (*terminalis*); proceeding from the end of any body.

Tortuous (*tortuosus*); having a devious, irregular, bending tendency.

Twisted (*torsiva*); a mode of estivation in which one margin of each piece overlaps that next it, its other margin being overlapped by the next on the other side.

Twining (*volubilis*); applied to stems which, being too weak to grow erect, wind spirally round surrounding bodies. It is singular that twining stems always grow in a determinate manner, that is, either winding from left to right or from right to left, but the same plant never takes both courses, and if it is attempted to cause it to reverse its natural course, it almost certainly kills it; the former mode is called *dextrorsum*, the latter *sinistrorsum*.

Vaginate (*vaginans*); sheathing the stem by the convolute base, as in grasses.

Valvate (*valvata, valvaris*); a mode of estivation in which the parts are applied to each other by the margins only.

Vernation; a term applied to the manner in which the parts of the leaf are folded when unexpanded—analogous to the *estivation* of flowers.

Versatile (*versatilis, oscillatorius*); adhering slightly by the middle so as to swing backwards and forwards, as in some anthers.

Vertical (*verticalis*); perpendicular, at right angles with some other body.

Vexillary (*vexillaris*); a form of estivation in which one piece is larger than the others, and folded over them, they being ranged face to face. This is the case in papilionaceous or butterfly-shaped flowers.

Wrinkled (*corrugata, corrugativa*); a form of estivation or vernation in which the parts are folded up irregularly in every direction, as in the flowers of the poppy.

Zigzag; similar to flexuose, bent from side to side.

TERMS CHIEFLY APPLIED TO ARRANGEMENT AND NUMBER.

Accessary; something added to the usual number of organs.

Agglomerated (*agglomeratus*); collected into a roundish head.

Alternate (*alternus*); ranged one above the other in an alternating manner, as many leaves.

Anisos; unequal; when applied before the name of an organ, it indicates that it is equal in number to some other organ understood.

Bifarious (*bifarius*); arranged in two rows, distichous; *trifarious* (*trifarius*), is arranged in three rows; *quadrifarious* (*quadrifarius*), arranged in four rows; and so on.

Binary; a form of arrangement where the parts are in twos.

Cæspitose (*cæspitosus*); growing in dense tufts or patches, tufted.

Capitellate (*capitellatus*); growing in small heads.

Capitulate (*capitulatus*); arranged in small heads.

Clustered (*aggregatus, coacervatus*); growing in compact roundish masses or clusters, aggregate.

Coadunate; united or soldered together.

Coagulans; congealed into a mass.

Compound (*compositus*); when formed of several parts united into a whole, as in pinnated leaves.

Conglomerate (*conglomeratus*); aggregate, clustered.

Continuous (*continuus*); uninterrupted; this expresses the reverse of what is meant by interrupted.

Crowded (*confertus*); when the parts are closely placed about each other.

Decussate (*decussatus*); arranged in pairs alternately crossing each other.

Distachya; two-spiked, arranged in a double spike, that is, with a double or divided axis or stem.

Distant (*distans, remotus, rarus*); the opposite to dense or approximate, &c.

Distichous (*distichus*); arranged in two opposite rows, but not on a divided axis, as expressed by *distachya*.

Double (*duplicatus*), or *twin* (*geminatus*); growing in pairs.

Effuse (*effusum*); spreading, a loose open kind of arrangement.

Eight; in Greek, *octo;* in Latin, *orto*.

Eleven; in Greek, *endeca;* in Latin, *endecim*.

Entangled (*intricatus*); when any parts are intermixed so as not to be readily disentangled, as the hairs, roots, &c. of many plants.

Fasciated (*fasciatus*); when several contiguous parts grow unnaturally into one.

Fascicled (*fasciculatus*); bundled, when several similar parts proceed from a common point, as the leaves of the larch.

Fastigiate (*fastigiatus*); when the parts are nearly upright and parallel, as the branches of the Lombardy poplar.

Five; in Greek, *penta;* in Latin, *quinque*.

Four; in Greek, *tetra;* in Latin, *quadri*.

Glomerate (*glomeratus*); gathered into roundish heads or heaps.

Imbricated (*imbricatus*); when the parts lie over each other regularly like the tiles of a roof.

Interrupted (*interruptus*); when any systematical arrangement is broken up or destroyed by local causes; thus a spike is said to be interrupted when here and there the axis is void of flowers.

Isos; equal; the opposite of *anisos*.

Lax (*laxus*); loose, when the parts are distant, with an open kind of arrangement.

Monostachya; one-spiked, arranged in a simple spike.

Nine; in Greek, *ennea;* in Latin, *novem*.

Nullus; none, absolutely wanting.

Numerous (*numerosus*); this expresses either that the parts are several but not of a definite number, or that they cannot be numbered with accuracy.

Ob-; a prefix indicating inversion; thus *obcordate* is inversely cordate.

Oligos; a Greek affix signifying few; usually employed in contrast with the quality expressed by the affix *poly;* the equivalent Latin term is *pauci*.

One; in Greek, *mono;* in Latin, *uni*—monoceras, unicornis, one-horned.

Opposite (*oppositus*); ranged on opposite sides of a body on the same plane; applied mostly to the position of leaves on the stem.

Poly-; a Greek affix signifying many, that is, that the parts are numerous; the equivalent Latin term is *multi*.

Quaternary; a form of arrangement when the parts are in fours.

Quinary; a form of arrangement when the parts are in fives.

Radiant (*radiatus*); ray-like, diverging from a common centre.

Rosaceous (*rosaceus*); arranged like the petals of a single rose.

Rosulate (*rosulatus, rosularis*); when the parts are arranged in a similar manner to the petals of a double rose.

Scattered (*sparsus*); the opposite of clustered, whorled, opposite, and such terms.

Serial (*serialis*); arranged in rows, not necessarily opposite.

Seven; in Greek, *hepta;* in Latin, *septem*.

Six; in Greek, *hexa;* in Latin, *sex*.

Solitary (*solitarius*); alone, distinct; growing singly.

Spiral (*spiralis*); arranged in a spiral or corkscrew-like manner.

Squarrose (*squarrosus*); spreading out nearly at right angles from the axis, as the leaves of some mosses.

Stellate (*stellatus*); the same as verticillate, except that the parts are narrower and more numerous.

Sub-; a prefix indicating a slight modification, equivalent to the English "somewhat;" thus sub-rotund means somewhat round.

Ternary; a form of arrangement when the parts are in threes.

Ten; in Greek, *deca;* in Latin, *decem*.

Three; in Greek, *tri;* in Latin, *tri*.

Topical; local, confined to a particular place.

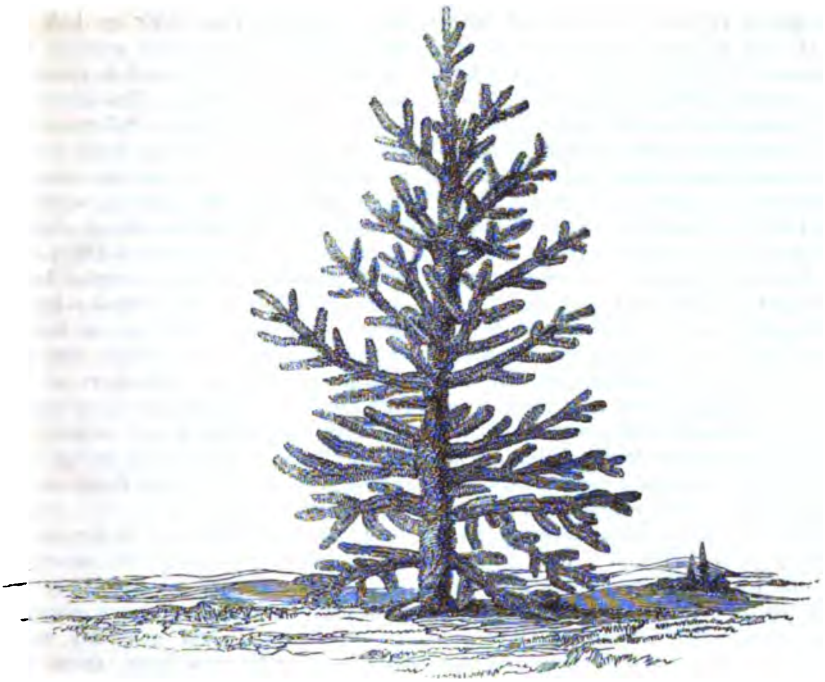
Twelve or *more;* in Greek, *dodeca;* in Latin, *duodecim*.

Twenty; in Greek, *icos;* in Latin, *viginti*.

Two; in Greek, *di;* in Latin, *bi*—diptera, bialata, two-winged.

Unilateral (*unilateralis*); arranged on one side, or turned all one way.

Verticillate (*verticillatus*); whorled, when several parts are ranged opposite around a common axis.



(*Araucaria imbricata.*)

CONIFERÆ.—The Araucaria.

Araucaria, *Jussieu.* Derived from *Araucos*, a name applied to the natives in those districts of Chili where the tree is indigenous. —Noble evergreen trees.

Araucaria imbricata, Pavon (imbricate-leaved Araucaria, or Chili Pine).—Leaves generally eight together, ovate lance-shaped, thickened at the base, stiff, straight, with persistent mucros. Cones globular at the end of the branches, about the size of a man's head; scales beautifully imbricated.

A very remarkable evergreen tree, of magnificent dimensions, almost the only one to be met with in those districts where it is indigenous. It is a high tree, from 80 to 100 feet, with a trunk like a pillar. Standing closely together in the forest, the trees are generally devoid of branches to the height of fifty or sixty feet: the top is in the shape of a depressed cone, the side-branches proceeding from the trunk in a horizontal direction, and ascending slightly at the tips. Over those branches the leaves are thickly set like scales, which give an appearance of rich embossed work. From the thick coating of leaves which pervades the whole outline of the tree, an idea of extreme brittleness is conveyed to the mind. The wood, however, was successfully used in ship-building in 1780 by Don Francisco Dendariarena.

This plant is a native of the mountainous parts of Chili, in South America, particularly in that division occupied by the tribes of original inhabitants called Araucos, from whom the tree derives its name; and from the fact that the climate where it thrives has accommodated itself so wonderfully to European productions, a hope may be held out that the Araucaria may in this country prove a valuable acquisition to the arboriculturist. The largest forests of this tree are on the elevated parts of Naguelbuta and Caramavida, which Pavon describes as "offering to the view, in general, a rocky soil, though in parts it is wet and boggy, on account of the abundance of rain and snow which falls in these regions, similar to many provinces in Spain." Pœppig, a traveller in the Peruvian Andes, states, that "the Araucaria forest of Antuco is the most northerly that is known in Chili; so that the northern boundary of this king of all the extra-tropical American trees may be estimated at thirty-six degrees south latitude. The extreme southern limit is not so clearly ascertained; which is not surprising when we consider how little, comparatively, is known of Western Patagonia: it seems probable, however, that it does not stretch far beyond lat. forty-six degrees. Between Antuco and Valdivia this tree only grows among the Andes, and, as the Indians assert, solely on their western declivities, and nowhere lower than from 1,500 feet to 2,000 feet below the snow line, up to which they frequently reach. Farther to the south, the Araucaria appears at a lower elevation; and

in the country of the Cuncos, and about Osorno, is said to occur on mountains of a very moderate altitude, near the sea. The Corcovado, a mountain that rises opposite Chilöe, is said to be studded, from its foot to the snow line, with large groups of these beautiful trees."

The wood, as grown in the Andes, is of a yellowish white colour, veiny, and of close texture; and is said to have been used in ship-building. The tree produces a whitish resin, used extensively by the natives in the cure of wounds and contusions. The fruit may be said to form the regular harvest of several of the original tribes, and it is eaten by them in a raw state, and after being boiled and roasted.

The tree is particularly ornamental, and no plant can be used with greater effect in distinguishing particular spots of country appropriated to art. It should be on every gentleman's lawn: it is both elegant and unique; and if sheltered during frosty weather, so as to keep off that rustiness of colour which a free exposure to the seasons brings with it, it will well repay the trouble in spring time.

With regard to what is the best mode of propagating this tree there is but one opinion—raising from seeds. Bottom heat is invariably recommended; and the seeds should be inserted to the depth of about an inch and a quarter, in large boxes or pans filled with free loamy soil, which should on no account be allowed to get dry. When two years old they should be transplanted into nursery lines, in a warm sheltered situation in the open ground, carefully guarding them from excess of moisture, and, in frosty weather, from excess of cold. Those raised in hothouses, greenhouses, &c., certainly look better; but when planted in their final situation, in exposed places, the former soon take the lead. Planted by the seaside in Norfolk, they have made shoots about a foot in length in one season. Plants nine inches high are 2*s.* each; eighteen inches high 5*s.* each (1846).

This tree has borne the names *Araucaria Dombeyi,* Richard; *Colymbea quadrifaria,* Salisbury; and *Dombeya chilensis,* Lamarck.

Araucaria Bidwilli, Hooker (Mr. Bidwill's Araucaria).—Leaves spreading, spirally arranged around the branches, ovate and pungently acuminate, three quarters of an inch long, and much dilated at the base. Cones (female) varying in shape from globular to oval, nine inches long by seven inches broad; scales loose, broad, winged, two-lipped, lower lip with a reflexed stiff spinous apex; (male) stout, cylindrical, four inches long; scales oblong, compact. Seeds obovate, two or two and a half inches long, and three quarters of an inch broad.

A very striking and noble evergreen-tree, of remarkable dimensions, growing in its native haunts from 100 to 150 feet high, with a stout trunk which scarcely tapers for one-half of its length, and is covered with a smooth blackish bark. Mr. Bidwill, its discoverer, describes these full-grown trees as very striking objects; the dead brances commence about half-way up the stem, and continue nearly to the summit, where the live branches are produced, about sixteen in a whorl. This bare-stemmed habit is induced by the crowded position occupied by the trees in the depths of the forests; indeed, Mr. Bidwill states that there are no live branches except on those parts which rise above the surrounding trees: this part of the trees forms a very obtusely conical, almost globular head, the branches being densely crowded. Around these branches the leaves are closely arranged in an imbricated form, as in *A. imbricata,* which indeed, in this respect, it a good deal resembles, only in the present plant the leaves spread out, often nearly at right angles; they are of a remarkably hard and rigid texture, slightly concave above, a little convex beneath, and generally marked or impressed with two lines, from the close application of the lower leaves in the infant state; they are dark green and glossy, averaging rather more than three quarters of an inch long, but, occasionally, on the young branches, twice that length: on the younger and terminal branches the leaves appear crowded, but the dilated base is there recognisable; and as the branches enlarge by age, this character becomes more and more apparent; at length remarkably so, the diameter of the flattened dilated base equalling the length of the leaf, which takes a transversely hexagonal form. Thus on the older branches the leaves resemble a series of flattened hexagonal scales, with a leafy spine projecting from the centre. The cones are produced on the topmost branches, close to the central stem, rarely more than ten or twelve in number; they grow upright, seated on short leafy branchlets arising from the horizontal main branches. Both in size and form, Mr. Bidwill describes them as varying considerably; sometimes they are spherical, sometimes pear-shaped, with the small end downwards, and sometimes nearly oval; but in all cases the scales are large, loosely compacted, and spreading, the majority of them nearly horizontal, about four inches long by three inches broad. These scales, when seen lying in their natural position, present each a thickened face to the spectator, tapering to an edge or wing on each side, and towards the apex becoming acuminated, with a recurved spinous point, and on the upper side another smaller scale or point, with which this is incorporated below; these reflexed points are so stiff and

pungent, that the fruit in a perfect state is hard to lift, even with thick gloves on the hands; the mass of the scales, however, is a soft pulpy substance, enclosing the seed, and this part soon decays, and on being torn open the seeds, of a very large size, fall out, blackened by their contact with the decaying pulpy matter. The male cones are about four inches long, stout, cylindrical, apparently growing at the end of short leafy branches; they are composed of a large number of closely imbricated spirally arranged oblong scales, presenting each a convex apex, and having an incurved point.

This noble tree inhabits the Mount Brisbane range of hills, seventy miles N.W. of Moreton Bay, in Australia. It was first introduced to this country in a living state by Mr. Bidwill himself, in 1843, and is, of course, yet very rare. Whether or not it will prove at all hardy in our climate remains to be ascertained, and at present there is little prospect of the experiment having a fair trial. The probability to be deduced from its hilly habitat, is not against but rather in favour of its being suitable to our climate; in order to this, however, the seeds should be collected from the highest points where it is found, and the plants raised from them planted out without being submitted to any of that pampering treatment which usually falls to the lot of scarce plants. At present, however, it is considered somewhat tender; and we believe most of the plants which exist in the country have been raised either by cuttings or by the fashionable but repudiable process of grafting, which is entirely destructive of the characteristic habits of coniferous plants, and in most cases sadly limits their existence and capabilities. The species is at least as hardy as those which immediately follow.

The native name of this tree is *Banza tunza*, or *Banya tunya*. The seeds are extensively collected by the natives about the neighbourhood of Moreton Bay, and are used as food. The fruit, it is said, ripens only once in three years, and the precise period of their ripening does not appear to be known to the aborigines, who visit the trees at different periods to mark how they advance. Before they become ripe the seeds are very sweet, but, as they approach maturity, they acquire the same bean-like flavour as those of the Chili Pine. The natives, however, greedily eat them at all times—before ripeness raw, and when ripe, roasted and pounded into cakes.

The wood is stated to be very close grained, but Mr. Bidwill was certain that none had been cut down in the district where he found the tree. He had, however, seen the wood of a plant five inches through, and this strongly resembled that of the Kawri (*Dammara australis*) but appeared to have a firmer and closer grain. According to Lawson's catalogue, plants of this species six inches high are charged 3*l.* 3*s.* each (1846).

Araucaria braziliana, Richard (Brazilian Araucaria).—Leaves lanceolate, loose, thinner than those of *A. imbricata*, of a shining light green; glaucous, and keeled underneath, and concave on the upper side; one and a half inch long, and a quarter of an inch broad. Cones compact, roundish-ovate, solitary on the tip of the branches; scales thick, corky, compressed, armed with sharp recurved spines.

A noble tree, about ninety feet high, introduced in 1819, not sufficiently hardy to stand the winters of this country in the open air. In general appearance it resembles *A. imbricata*, though it is much more open and spreading; its rate of growth, too, is more rapid; but this may probably be accounted for by the fact that many of the specimens in England are, occasionally at least, encouraged by being kept in a hothouse. Many botanists at first considered it as identical with the preceding *A. imbricata;* but the cones, and especially the seeds, which have no winged appendages, indicate a distinctive difference. The disposition of its branches, which are horizontal, and the whitish colour of its timber, also prove it to be quite distinct. Its native habitats are around the base of mountains in the province of Minas Geraes, on the banks of the river Paraibuna, and throughout Espiritu Santo. The seeds contain very little resinous matter, and are common in the market of Rio de Janeiro. In England the plant is propagated chiefly by cuttings, which are treated in every respect like those of heaths. At Dropmore, and in the Horticultural Society's garden, are the finest specimens in England; but they have to be carefully protected from frost during the winter months. Plants two feet high are 10*s.* 6*d.* each (1846).

Araucaria excelsa, Aiton (lofty Araucaria, or Norfolk Island Pine). — Leaves long, slighty waved, narrow, and, when the tree is old, closely pressed to the branches, or bent inwards. Cones globular, on thick footstalks; scales thick, leathery, broader than in the foregoing.

One of the most majestic trees in nature, a native of Norfolk Island and New Caledonia, and introduced into this country during the close of the last century. It reaches the height of 200 feet, and its extreme altitude has been found, in a few cases, to be about 230 feet. Thus it is that in the first letters from those who emigrate from this country, reference is always made to the prodigious height and noble appearance of the forests and

in the country of the Cuncos, and about Osorno, is said to occur on mountains of a very moderate altitude, near the sea. The Corcovado, a mountain that rises opposite Chilöe, is said to be studded, from its foot to the snow line, with large groups of these beautiful trees."

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woods formed of this tree. The circumference of the trunk of the highest trees is from twenty-eight feet to thirty feet near to the ground. According to Captain Hunter, the wood of this tree is short grained, spongy, and not by any means adapted for house-carpentry or ship-building, though frequently used in the latter capacity. It is almost without turpentine, and hence it is not calculated to resist decay for many years. The wood he represents to be so heavy that five trees out of six, when cut down, sank in water; but that out of thirty-seven trees cut down for repairing a ship, twenty-seven of them were found defective. Captain Cook, however, represents the wood as white, close grained, tough, and light. "Turpentine," he says, "had exuded out of most of the trees, and the sun had inspissated it into a resin, which was found sticking to the trunks and lying about the roots." "Norfolk Island," says James Backhouse, "is about seven miles long and four broad. A small portion of its southern side is limestone; to the east of this there is a still smaller portion of coarse, siliceous sandstone. The remainder of the island is basaltic, and rises into hills, covered with grass and forest. The highest hill is Mount Pitt, which is on the north side of the island, and about 1,200 feet above the level of the sea. The upper portions of the valleys, and the higher parts of the hills, are covered with wood. The Norfolk Island Pine (*A. excelsa*) towers a hundred feet above the rest of the forest; it also grows in clumps, and singly, on the grassy parts of the island, to the very verge, where its roots are washed by the sea in high tides. In figure this tree resembles the Norway Spruce, but the tiers of its branches are more distant. Its appearance is remarkably different, in its native soil, from what it is in the fine collection of trees at Kew, where it nevertheless exhibits many of its striking and beautiful features."—(*Narrative*, p. 251.) "We measured a Norfolk Island Pine twenty-three feet, and another twenty-seven feet in circumference. Some of them are nearly 200 feet high. The timber is not of good quality, but it is used in building; it soon perishes when exposed to the weather."—(*Ibid.* p. 265.)

Like the other individuals belonging to the genus, this plant is highly ornamental, and peculiar in the mode of its growth. It should by all means be tried in quiet sunny spots surrounded by high woods, and sheltered sufficiently for a series of winters until twenty or thirty years old, when, in all probability, it might be gradually inured to the climate without close protection. This species is propagated both by seeds and cuttings: the former mode is to be recommended as producing the handsomer plants. Those four feet high are sold at 10*l.* each; plants one foot high are two guineas each (1846).

Salisbury called this plant *Eutassa heterophylla;* and it has been called *Dombeya excelsa* by Lambert, and also *Altingia excelsa.*

Araucaria Cunninghamii, Aiton (Cunningham's Araucaria). — Leaves smooth, shining, straight, rigid, varying in form, two-rowed, awl-shaped, about half an inch long, keeled underneath. Cones resembling those of *A. imbricata*, ovate, terminal, solitary.

A tall tree, though not by any means equal to the foregoing. It is found on the basaltic soils of the shores of Moreton Bay, within the influence of the sea air; and, according to Backhouse, "further into the interior* it forms large woods." This writer observes that it is frequently associated with several species of *Eucalyptus*, *Melaleuca*, *Banksia*, and *Callitris arenosa*, both at Moreton Bay, and in the neighbourhood of Brisbane, where it rises to the height of 120 feet. Its wood is of a pale yellowish colour, and is used for boat-building and common purposes at the above town. The finest specimens in England are at Dropmore and Kew; but in every case, in this country, it requires close protection during winter. It is highly probable that, if planted within the influence of the sea air, it would stand a British climate with very little shelter. In order to propagate the species, the seeds should be imported in the cones, and treated like those of the *A. imbricata*, keeping the young plants in a greenhouse, instead of exposing them to the open air. Small plants are 10*s.* 6*d.* each (1846).

Araucaria elegans, of gardens.—Not seen by the writer, but represented to be an elegant addition to the genus, and more worthy of attention on account of its being hardy. Plants, one foot high, 4*l.* 4*s.* each, (1846).

Araucaria gracilis, of gardens.—Another elegant plant, with small slender leaves, also hardy enough to stand the winter of Britain. Plants, one foot high, 4*l.* 4*s.* each (1846).

CONIFERÆ.—THE CUNNINGHAMIA.

CUNNINGHAMIA, R. Brown. Named in honour of Mr. James Cunningham, the discoverer; and of Mr. Allan Cunningham, an enterprising botanical explorator.—Evergreen small tree.

Cunninghamia sinensis, Richard (Chinese Cunninghamia).—Leaves proceeding at once from the branches, scattered in insertion, more

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[* In which he perhaps mistakes it for the recently determined *A. Bidwilli.*]

or less two ranked in direction, lanceolate, stiff, long pointed, about two inches in length. Cones without footstalks, globular, drooping, one inch and a quarter in length; scales ovate, jagged on the margin.

A small sized elegant evergreen tree, which, upon its first being discovered, gave rise to a great many doubts as to its proper place amongst the Coniferæ. Hence it for a long time bore a great many synonyms, namely, *Araucaria lanceolata*, *Pinus lanceolata*, *Abies major sinensis*, &c. &c.—This tree was introduced from China at the commencement of the present century, and was generally kept in hot-houses and greenhouses; but from more recent experiments there is no doubt left of its accommodating itself to an open air climate in this country. In the pleasure-ground at Claremont is a specimen 25 feet high. Another, at White Knights, which has never been protected, is 30 feet high, forming a most elegant object; and at Elvaston Castle, Mr. Barron, the gardener, has raised some beautiful plants from cuttings, a process which in this instance has been found to answer extremely well. The best way is to treat them like heaths, in a sharp soil containing a good mixture of sand, and subjecting them to a moderate bottom heat. The mode of compelling such plants to send out a leader is thus described by Mr. Stewart Murray, in Loudon's *Gardener's Magazine*. "In the Glasgow Botanic Garden, in 1825, were two plants, 2 feet or 3 feet high, struck from cuttings some years previously, the tops of which, though the trees were in very luxuriant health, still retained the appearance of a branch, which, even when tied up to a stake, always seemed as if endeavouring to regain its horizontal position. During the winter of 1825, I loosened the top of one from its stake, and fastened it down quite in a horizontal direction; in about six weeks afterwards, a very vigorous shoot made its appearance from below the surface of the earth in the pot. When this shoot had attained the height of eight or nine inches, I cut away the old top entirely, and at this time (1827) the centre shoot produced is nearly 2 feet high." The same experiment has been successfully practised on this, as well as on other plants, by different individuals, in various localities. Small plants, in pots, 1*s*. 6*d*. each; those 1 foot in height, 3*s*. 6*d*. each (1846).

Variety. *C. sinensis glauca*.—A beautiful variety with slightly glaucous leaves, growing as freely as the species. Plants, 1 foot, 7*s*. 6*d*. each (1846).

CONIFERÆ.—THE DAMMARA.

Dammara, from *Dammar*, the name given by the inhabitants of Amboyna to the resin which the tree produces.—Evergreen trees.

Dammara orientalis, Lambert (oriental Dammar Pine).—Leaves nearly opposite, entire, of a light glaucous green, oblong, lanceolate, 1½ inch long, and ¾ inch in width. Cones ovate, with adpressed scales rounded at the top.

A tall and beautiful broad-leaved evergreen tree, nearly akin to the Araucaria, flourishing on the summits of the mountains in one of the loveliest islands in the Indian Ocean. It is brought down to garnish the trim hamlets with which Amboyna is studded, and occupies a conspicuous place among the famous hard woods of that country. It was introduced into England in 1804 by Sir Joseph Banks, and has ever since been admired for its richly garnished branchlets and elegant habit. The wood of the tree somewhat resembles that of the cedar, and is represented to be light and of inferior quality, and consequently unfit to resist continued exposure to the atmosphere. The chief use of the tree consists in the resin which it yields, which is of a pure crystal-like colour, and which, after incisions are made, hangs like icicles from the trunk. The cones are imported from New Zealand, and the seeds sown in pure loam in pans placed in a stove. They should be covered to the depth of half an inch; and when fairly up, they should be gradually inured to the cold, until they are placed in a warm sheltered sunny spot in the open ground. The probability is, that this species will prove hardy enough for the climate of England. [?] Plants, 6 to 9 inches, are 15*s*. each; and those 2 feet high are £3 3*s*. each (1846).

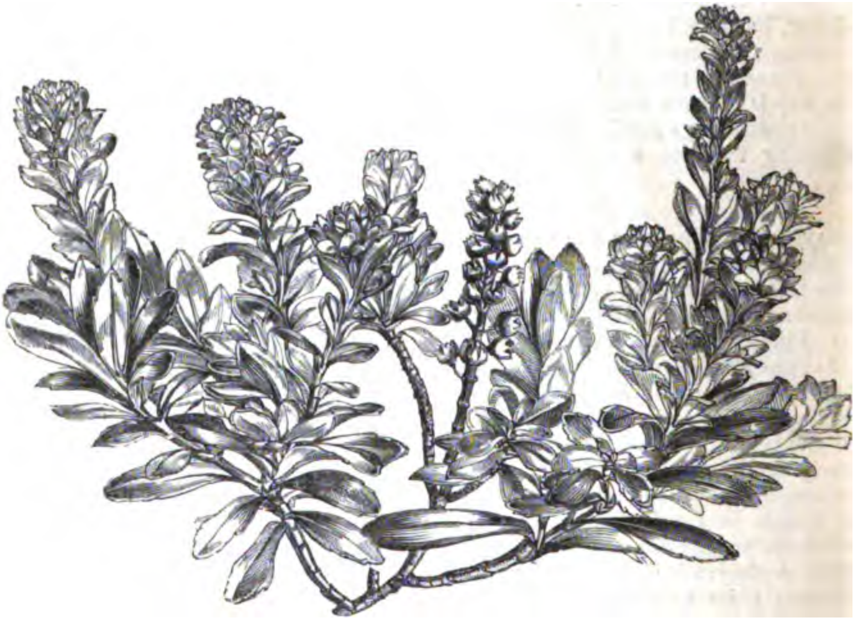
Dammara australis, Lambert (southern Dammar Pine).—Leaves sessile, crowded, rigid, somewhat wavy, shining like those of the box-tree, much broader at the base than those of the foregoing species. Cones turbinate, terminal, erect, tapering towards a thick footstalk, which gives them an appearance of being top-shaped.

A lofty tree, discovered by Cook in 1769, and growing plentifully on the banks of the river which traverses the interior of the Bay of Islands, named by Mr. Marsden the *Gambier*; also on that smaller river called the Thames, by Captain Cook. But, though abundant in the valleys, it ascends to the sides and tops of the mountains, and there towers far above the other gigantic trees with which it is associated, its trunk being bare and straight to the height of seventy feet, and its top dense and leafy. In a few instances, clean columnar trunks have been found without a single branch 100 feet in length. The excellence of the wood of this pine is now beyond a question; for according to Lambert, when it was tested along with the Riga pine, the result was as follows :—"Both pines were 1½ inch square, 3 feet long, and suspended 10 inches from the end. The *D. australis* bore a weight of 1 cwt. 2 qr. and 15lbs. before it broke, and the Riga pine only 1 cwt. 2 qrs. and 1lb.; but the former weighed 1lb. and 13 oz., while the latter weighed only 1lb. and 8 oz. This tree, like the other, yields a glassy transparent resin, which hardens by exposure to the air, and which is found to answer admirably as varnish. The seeds should be sown in pans of loam in a stove, and gradually shifted to a colder situation. If the cones were gathered from such of the trees as stand on the tops of the mountains, there is little doubt that the young plants might be grown in a greenhouse, and finally inured to warm situations in the open air. All experience with half-hardy plants goes to confirm this theory. Plants 18 inches high are 15*s.* each (1846).

The foregoing paper completes the series relating to the true cone-bearing plants (popularly so considered) comprising the tribe Abietinæ. The other tribe of coniferous plants—Cupressinæ, whose fruit has been distinguished by the term *galbulus*, will be treated on in the succeeding volume; it will include the arbor-vitæ, the cypress, the juniper, and one or two smaller genera.

The genera forming the tribe Abietinæ just completed, all of which are included in the present volume, are :—Pinus (pp. 77, 125, and 159); Abies (p. 258); Picea (p. 339); Larix (p. 343); Cedrus (p. 449); Araucaria (p. 543); Cunninghamia (p. 546); and Dammara (p. 547).

The order Taxaceæ, one of the near allies of Coniferæ, is treated on at p. 20 of the present volume; this order includes the genera Taxus, Torreya, Salisburia, Podocarpus, Dacrydium, and Phyllocladus.



Veronica Benthami.

ANTARCTIC VERONICAS.

Several interesting sub-shrubby species of Veronica are known, though not yet introduced to our gardens. Of two of these, most beautiful figures are given in Dr. Hooker's *Flora Antarctica.* The species now specially referred to are *V. Benthami* (Bentham's Speedwell) and *V. odora* (sweet-scented Speedwell).

Veronica Benthami is an erect branching shrub, growing from two to four feet high. The branches are spreading, and clothed with decussate (cross-wise) sessile leaves, varying in figure from oblong to oblong-obovate and linear-oblong. The flowers grow in erect, leafy, terminal racemes, and are of an intense azure colour, with violet-coloured veins. It is not only a beautiful, but a very remarkable plant, and one of the greatest ornaments of the barren hills it inhabits. The flowers are nearly as large as those of *V. elliptica* (*V. decussata*), that is, about five or six lines in diameter. They are of a beautiful blue colour. This plant was found abundantly on rocky places on the hills both in Lord Auckland's and in Campbell's Islands. Haubron and Jacquinot, in a French work called *Voyage au Pole Sud,* names the plant *Veronica finaus-*

trina. The species, however, well deserves to commemorate Mr. Bentham, who has very successfully laboured in the family to which it belongs.

Veronica odora is also a shrubby species, of elegant appearance, but much more slender in its growth than the former. Its slender branches have a peculiarly upright, somewhat fastigiate habit. The leaves are of very equal size and figure, elliptic-ovate, and they are very precisely arranged in the decussate form. The flowers are small and white, and grow at the ends of the shoots in crowded sub-capitate racemes. They are very sweet scented; indeed the species is more remarkable for the delicious fragrance of its flowers, resembling that of the jasmine, than for any special beauty of appearance. It is found in the form of scattered bushes, in woods near the sea, on Lord Auckland's group of islands.

Veronica odora.

Besides these, the *Veronica elliptica* (*V. decussata*), a shrubby species long known in our gardens, is found abundantly near the sea, both in Campbell's and in Lord Auckland's Islands. Dr. Hooker remarks : "I saw but one specimen in full flower, growing on an inaccessible rock overlooking Rendezvous Harbour. From a distance it seemed powdered with white flowers."

In New Zealand this genus is one of the most extensive of flowering plants, containing upwards of two dozen species, of which four-fifths are shrubby or arborescent. One or two very handsome ones of this habit are already introduced to our gardens, such as *V. speciosa*, with deep purple flowers, and very broad obtuse leaves; *V. elliptica*, seldom seen well grown, but then really beautiful, with white flowers, and small neat elliptic leaves; and *V. salicifolia*, with lance-shaped leaves, and long drooping spikes of French-white flowers.

These species do best in a cool greenhouse, if they are grown in pots. In some sheltered situations, and in mild winters, *V. elliptica* has stood out uninjured (and most probably the others here mentioned would also do so), but it will not do this in ordinary seasons. They may most properly be ranked as half-hardy plants, and would flourish to perfection in some of those glass structures without artificial heat, which we may now hope to see erected very extensively for the purpose of growing the numerous plants of sterling beauty which will hardly survive our climate unprotected. They grow very readily in a soil composed of three parts turfy loam, and one part peat earth, lightened with sand and leaf mould; and all propagate freely from cuttings.

NEW BRITISH PLANTS.

The following additions to the Flora of this country have been announced during the past year. Some of the plants appear to have been detected earlier, but the facts were not made public until the present season. We have made our notices of them brief, and have put them into the form most likely to be useful; that is to say, we have appended to each plant a brief botanical character, as published in the various foreign botanical works where the plants have been described. The books which are professedly devoted to the description of the species inhabiting this country, are of course, at present, deficient as regards these recent additions; the specific definitions we have given, will therefore be useful to those who are interested in British Botany, but who have not access to a botanical library.

Carex argyroglochia (Hornemann). — "Spikes oblong distichous; spikelets 4 to 6, alternate, obovate; fruit ovate, acuminate, glabrous, as long as the silvery glume; beak bifid; bracts longer than the spikelets." Spikes two or three approximate: glumes oblong, rather acute : perennial. Near *C. ovalis;* differing in its long foliaceous bracts. A plant with this character was found by Mr. Westcombe, near Malvern, Worcestershire.

Glyceria hybrida (Townsend). — Closely allied to *G. plicata* and *G. fluitans.* Found by Mr. Townsend at Dovedale, Gloucestershire.

Hieracium heterophyllum (Bladon). — "Leaves all sessile, cauline, lowest lanceolate, upper ovate acuminate."—Stem 1 to 3½ feet high, clothed with slender silky hairs, springing from an oblong glandular base. Leaves all cauline, the base not truly clasping. Flowers size and colour of those of *maculatum;* scales of the involucre attenuated towards the point, and, as well as peduncles covered, with hairs, as on the stem; bracteas ovate-acuminate; seeds longitudinally ribbed. Perennial?—Flowers in August and September. Allied to *H. murorum* and *H. maculatum*. Found by Mr. J. Bladon of Pont-y-pool, growing in woods and hedge banks; very rarely in open ground.

Linaria supina (Desfontaines).—This plant, described by Mr. Babington, in *Manual of British Botany*, as a true native, found at Catdown quarries, Plymouth, by Mr. Keys, is ascertained to be an accidental introduction, now becoming naturalized.

Malva verticillata (Linn.)—"Stem erect; leaves cordate, rather orbicular, bluntly angular; flowers axillary, glomerate, sessile; calyxes scabrous, rather inflated; carpels smoothish." Stem one to two feet. Flowers small, white, purplish at the tip, almost sessile. Annual. Flowers in June and July. (China: introduced to gardens in 1683.) A plant very nearly allied to *M. crispa*, of which it is possibly the type, has been determined (with but slight doubt) to be this species. Found by Mr. J. Motley, in corn-fields at Llanelly, Glamorganshire, in 1845; plentifully in three fields. Not indigenous.

Phalaris paradoxa (Linnæus).—"Panicle subspicate, cylindrical; glumes of perfect flowers acuminate, of rudimentary flowers præmorse." Intermediate flowers hermaphrodite, the rest imperfect. Annual. Flowers in July. This plant was found by Mr. J. Hussey, in July 1847, in a field near Swanage, Dorsetshire. Reported as *P. utriculata* in *London Journal of Botany*, but determined by Mr. H. C. Watson to be *P. paradoxa*.

Polygala depressa (Wenderoth).—"Stems depressed, filiform, branched, leafy; lower leaves mostly crowded, oblong or obovate-elliptical, obtuse, upper leaves lanceolate, scattered; racemes short, few flowered; flowers crested, lateral sepals (wings) oblong-obovate, their lateral nerves reticulate, anastomosing with an oblique branch of the central nerve." Perennial. Flowers in May and June. Very near *P. vulgaris* and *P. amara*. Found by Dr. Bromfield on Bleak Down, Isle of Wight, in May 1846. It agrees also with *P. serpyllacea* (Weihe).

Pyrola maritima (Kenyon).—Probably a variety of *P. rotundifolia*, distinguished by its size, the form and length of the sepals, and length of the stamens. Found by Mr. Kenyon in Lancashire.

Simethis bicolor (Kunth).—*Anthericum planifolium* (Vandelli).—"Leaves flat; filaments woolly." Roots fascicled, club-shaped; stem one foot, erect, terminated by a many-flowered corymbose raceme; leaves radical, grass-like, subcarinate; flowers solitary, erect, on long pedicels, white tinged with purple externally; pedicels with a bract at the base. Perennial. Flowers in July. The *Anthericum planifolium*, and *Bulbine planifolia* of older authors, found by Miss C. Wilkins growing amongst heath and furze in a fir plantation about two miles from Bourne, in July 1847.

HOVEA CELSII, AND ITS CULTURE.

There is no plant so well repays the extraordinary care required in counteracting its bad habit as Hovea Celsii. Its brilliant blue butterfly-shaped flowers, closely investing its stem, and set off by the protruding green leaves, form an object of peculiar interest, and it requires no little pains and skill to overcome its natural tendency to lanky and uncouth growth. There are several points to which the cultivator must direct his attention, but which are lost sight of by the ordinary gardener. The plant grows rapidly and long in its shoots; and we once saw one of the most beautiful dwarf plants—as it appeared to the casual observer—win a prize against a much better grown specimen, and the judges were duped by what in some cases would be called a fraud. The dwarf plant was the head of a tall gauky standard, and the stem had been coiled round the inside of a large pot, and so pegged down as to leave nothing but the head above the soil; and this fraud succeeded in consequence of the judges being ignorant of its nature, and the handsome appearance of the plant, while common gardeners, who pretended to no particular knowledge of plants, had their suspicions awakened by the extraordinary dwarfness of a plant hitherto seen only on a long stem. They did not look for a stem pegged down round a pot, and the head turned up in the centre; they searched, expecting to find that it was the head of a plant stuck into a pot: deception they knew there must be, but the nature of it was only discerned in seeking for another kind of fraud. However, ugly as is the natural growth of the Hovea, its habit is to be conquered, and its growth controlled. We begin with a struck cutting, which we will pot into the size called sixty, perhaps two and a half to three inches across, in soil composed of the loam of rotted turves two parts, peat-earth one part, no dung of any kind, there being sufficient vegetable mould to answer all the purposes of richness in rotted turves, such as are taken from a pasture to lay down for lawns. In this compost, rubbed through a coarse sieve, is the cutting to be placed in the centre of the pot, which must be well drained with coarse moss or crocks. We shall presume the cutting to be two inches above the soil, which should only just cover the upper part of the root. As soon as the top of the cutting moves, to show it is establishing the root, pinch out the top. Let the pot stand in a heath pit, close to the glass, in the most airy part of the greenhouse, shaded from the blazing heat of the sun, and be entirely uncovered in mild cloudy weather. All the air that can be given, should be given; the object is to grow the plant slowly, for with rapid growth in exciting soil, such as the one-shift madmen recommended, the leaves would be far apart, and the most consummate skill would fail to make a handsome plant. The cutting, or rather the plant, will soon throw out lateral branches.

The soil must not be kept too moist, and the drainage must be occasionally examined, for a stoppage of that would subject a slow growing plant to disease, and that would soon produce the enemies which hasten a plant's destruction. The plant must not be exposed, therefore, to cold or parching winds that would check it, nor must it be excluded from free air, lest it should be drawn. The lateral branches will soon be two or three inches long, when the ends must be also pinched out of them. In the due course these lateral branches throw out others, and such of these as grow in a position to help to form a handsome bush, may be allowed to go on; but such as grow inwards or across others, or only lead by their positions to thicken the plant, must be taken away. If the plant assumes a handsome bush-like form, and continues to do so as the young branches advance, you may use your own pleasure as to allowing it to bloom or not. If you look more to future than to present growth, the incipient bloom may be all picked off as fast as the buds show themselves, and the branches will be inclined to ramble on directly, but at the same time that the buds are picked off, the ends of the branches must be taken off, and side branches will be thrown out that will require some discrimination in choosing which shall grow, and which require to be taken away. But as the Hovea is very beautiful when blooming ever so young, it is better to let it flower the first time it produces flower buds; and the instant the branches move to elongate, which they do while the flowers are in perfection, stop them by pinching out the young growth at once. It is well to remove the flowers as they decay, instead of allowing the plant to seed, because that really tries a plant more than any thing. All this time we have said nothing about shifting. Let not any season or period rule this; occasionally examine the plants by turning out one of the balls, and when the roots have reached the side and begin to run round it, change the pot before the fibres mat together: change only to one size larger, that is, from sixty to forty-eight, from forty-eight to thirty-two, thence to twenty-four, sixteen, twelve, and eight. Every time it blooms and the ends are taken off to make the plant send out fresh branches, remember to select those which are growing right, and rub off such as are likely to grow wrong; the head must be kept open and handsome. The young wood bears the flowers, and you must have an eye to this in selecting the shoots that are to grow, and removing those which are not. The slowness of the growth causes the foliage to be closer, the flowers more abundant, the plant more bushy and effective. So long as it is carefully stopped, and pruned with as much care as a choice peach or nectarine tree, and grown in healthy but not rich soil, so long will the plant do the grower credit and not become naked. To grow these plants as a standard, it is almost enough to let them alone, for they are not disposed to send out lateral shoots in abundance without stopping, and when they do, they ought only to be rubbed off the lower half the stem. As the tree grows up the leader must be preserved, and if there is any thing like a fork or a strong branch comes out near the top, it must be instantly taken away. By continually removing the lower branches, so as to keep the stem clear half the length of the tree and not higher, the stem grows strong enough to support the head, and when the tree is as high as you wish it, remove the lower branches, leaving only four or five of those nearest the top, each of which is to be shortened to half a dozen eyes and the top pinched out. When these push out their lateral branches, rub off all the buds that show inwards, and let all those grow that are outwards. See, however, that none cross each other, and as all have a tendency to grow upwards, tie them down so as to show out horizontally, pointing all round the tree; as these are to form the head, and are wanted permanently, place them pointing outwards, in the direction that most equally divides the whole space round the head, and those above require quite as much adjusting as the lower ones. If, however, they grow in a handsome form, let them show their bloom, and if any branches have not grown enough for your taste, let them shoot the length before you stop them, but generally take out the tops of all the branches the instant they attempt to make fresh growth, and be as careful of the lateral shoots as possible, allowing all to grow that can contribute to the beauty of the head, and stopping all those which would merely crowd the centre. The branches held down horizontally will after a time be set in that position, and the weight of the other branches will assist in making them permanently so. By this means, and such steps as the skill of the gardener may suggest, as difficulties or occasions arise, the Hovea, either as a standard or a bush, may be made one of the most beautiful of greenhouse plants. We need hardly mention, that when the plants are too large for the heath pit, they may be moved to the heath house, greenhouse, or conservatory. The gardener must, however, bear in mind that there never was a more wild notion, than that the quick growth of plants displayed skill. There is no art in promoting rapid growth: it is as easy as growing orchideous plants, and this is easy enough, every gardener who has grown them knows; there is less room for blundering in it than in any other race of plants we know. Exciting soil, plenty of it, heat and moisture, will produce a plant in one season as large as ordinary treatment will produce in three,—but is it worth more? Yes, as a nursery plant to cut up, it is, because it may be valued by the yard, or the quantity of plants it will propagate; but in a gentleman's place such a plant would not be worth so much as one of slow growth the same age. But there does require great skill to grow a plant slowly and keep it in health, and those who can accomplish it leave behind them, in point of scientific display, all those who boast of their rapid cultivation. A man who really knows his business must feel disgusted at the great rambling specimens of Fuchsia, Epacris, Chorozema, and many other subjects, with leaves three times as far distant as they ought to be, exposing bare stalks and blooms equally distant in proportion. We have seen at public exhibitions scores of plants which were a discredit to the growers' judgment and skill, fitted only for the vulgar taste of those who value every thing by quantity, and indicative of a low mind and bad instructions. If those gardeners who pride themselves upon being able to grow a thing quicker and larger than any one else, had a grain of taste, they would look at what a plant is capable of being made in the way of symmetry and beauty, and would study proportion a little; we should not then see the tables that ought to be occupied by elegance and beauty, covered with specimens which betray utter ignorance of what a plant should be to be perfection.

G.

CAMPANULA FRAGILIS.

(*Cyrilli.*)

THE BRITTLE BELL-FLOWER.

This species is properly a dry-frame plant, but it is often met with as a hardy greenhouse herbaceous plant, being perhaps more easily and safely preserved on the shelves of a greenhouse—where there is such a convenience—than in a frame where the latter is confined and at all damp. It, however, by no means requires the warmth of a greenhouse; and a common frame, with a dry bottom and well ventilated, will keep it safe in winter; in summer it of course may stand exposed.

It forms a diffuse branching plant, of about six inches high, and from a foot to a foot and a half over. The plant in a barren state forms a thick stem with a tuft of leaves, which are roundish-heart-shaped, and bluntly crenate-lobed, and grow on long stalks; from this part the spreading flowering stems are thrown out, and these bear smaller, ovate leaves, all the leaves being of a bluish green and quite smooth. The flowers are large for the size of the plant, pale blue, and very numerous, terminating the branches in a kind of racemose panicle. It is a native of Italy, and other parts of the south of Europe, and is recorded to have been introduced to our gardens about 1826. The flowers are usually borne in the height of summer. It has borne the following names:—*C. diffusa* (Vahl); *C. cochlearifolia* (Vahl); and *C. crassifolia* (Nees). The plant represented in the above engraving is a variety of this species, and is usually called *C. fragilis var. hirsuta.* Tenore however calls it *C. fragilis var. lanuginosa,* the two names having nearly the same meaning, and referring to the only particular in which it differs from the species, namely, in the plant being entirely hispid instead of smooth, that is to say, covered, as it were, with short hair-like woolliness.

It is easily cultivated. Large tufts are most effective, so that it should rather be allowed to grow on to that state, than constantly divided to make small plants. For this purpose nothing is necessary but to shift it two or three times during the spring and summer, until it is placed, say in a nine-inch pot: when it has reached this size it would be inconvenient to increase the size of the pot, so that then, after flowering, it should be turned out, the ball reduced, and then the old plant repotted into a smaller pot—as small as convenient—very much after the way in which

Pelargoniums are treated; it may then be again shifted on for flowering when it gets established. A light loamy soil suits it; and it may be increased by planting any little offshoots that can be obtained as cuttings. In summer it may stand with other choice half-hardy pot plants; and in winter may be placed in a dry frame or greenhouse, as may be most convenient.

THE GARDENIA, AND ITS CULTURE.

There is no plant that we are aware of more fragrant, more handsome in its growth, or more easily cultivated than the Gardenia. There are several varieties, but G. radicans and G. florida appear the most popular and of the simplest culture. The flowers are white, double, full, somewhat ragged, but fragrant beyond measure. The plants grow well in a mixture, which we observe quoted in the Gardener's Almanack as a universal compost, and it is very nearly so. It consists of the loam in which the turf has been rotted, peat earth of the kind so generally used for heaths, cow-dung, and a little silver sand, the quantity to be varied as the compost may require to prevent its being too adhesive. It should be potted first in small pots and shifted as it grows. When you desire to propagate it you should select shoots of the last year's growth, or rather of the latest growth, which may be two or three inches long; take these off and cut up to a joint, remove two or three of the lower leaves, so as to leave nearly an inch to go into the soil; then take a wide-mouthed pot, and fill it first one-third with crocks for drainage, and then within half an inch of the top with the soil, let the bottom be struck two or three times on the potting bench, to settle it down a little and level the surface. Fill the pot up with silver sand even with the edge of the pot, and then, with a very fine rose that will not displace the sand, water it with soft water, so that the sand may be saturated and the soil be fairly wetted through. Now take a bell glass that will nearly reach the edge of the pot, and press it on the sand so as to make a mark. Take the cuttings one by one, and put them into the sand, so that the bottom of the cutting may reach the compost, but not go into it; a slight sprinkle of water over the foliage, and to settle the sand close about the stems, completes the setting, and the glass may be put on and placed in a common hot-bed, with a slight heat, or, which is handier, better, and requires less care, plunged into the tan in a propagating house, there being required a slight bottom heat. A shade of paper should be placed over the glass, to keep off the rays of the sun. Every morning the glass should be wiped dry and then replaced. The hot-bed will do just as well if the heat has sufficiently declined, but care must be taken to keep the temperature down. The best times to take the cuttings are when the shoots have made about two inches of growth, or else when the plant has set for bloom, and shows the difference between the blooming ones and those that will not, and this should be the guide in preference to any stated period, for with slight bottom heat, constant watching, regularly wiping the glasses, and watering the cuttings when they lack moisture, the plant strikes easily and in a moderately short time. If any of the cuttings when they begin to grow set for bloom, which is a common occurrence, the bud should be picked off, as it greatly checks the growth of so small a plant; but if that be not an object, a well rooted cutting will perfect the bloom well enough. In a few weeks after the cuttings are inserted they will be found well rooted, and they must then be potted off: they may be first potted in large sixty-sized pots, in the same sort of compost they were rooted in. Prepare the pot by putting an inch of crocks at the bottom, or if it be plentiful you may fill one-third of the pot with clean but coarse moss, and then one-third more of compost; this leaves a third to be filled. Strike the pot of cuttings on its side gently, so as to disturb the soil a little, and then with a piece of stick like the blade of a blunt knife thrust in close to the side where the compost is disturbed, and raise up the earth and cuttings together. Separate them carefully without breaking the roots, and holding one upright in the centre of the pot, fill up with the soil, pressing and adjusting the cutting, so that the soil shall come up to the under leaves, and the pots be full of the compost. Do this with the whole of them, then place them all in a slight hot-bed, water with a fine rose all over the foliage, and with soft water of the temperature of the bed, sufficiently to settle the earth about the roots, shut them down close and shade them; in a few hours give them a little air, but not to let in wind; see now that they are kept moist until they are well established; when they have begun to grow give them air rather more freely, and always shade them from the hottest rays of the sun. One half the plants may now be topped, that is, the heart pinched out, to form the growth of lateral branches, and promote bushy growth, but the other half may be allowed to grow their own way, as the plant is inclined to grow handsome without any assistance. This, however, makes two very distinct kinds of plant, and you may keep them both growing until the pots are filled with roots but not matted; you may now prepare to shift them into pots of the size forty-eight, by filling them with one-third crocks, then a little compost; then take the ball of earth out whole, without disturbing, by tapping the edge of the pot in which they are growing, and place the ball whole in the larger pot, filling all round it with the same kind of soil, and gently pressing it down between the ball and the side of the new pot; regulate them nicely, and water with tepid water to settle the earth to the balls. These may be placed in a hot-bed again, made with dung in preference to any other, the heat having declined a little and being kept up moderately by linings when it is going too low. Here they will continue to grow and make wood. If they show bloom, use your own pleasure as to letting them flower or not, remembering that if they bloom they do not grow so fast. If any of the branches are inclined to grow too long or are too vigorous for the rest of the plant, take the heart out or a piece off, so as to keep the plants in shape; and if the lateral branches altogether are growing too long, pinch out the ends that they may still send out more. In this way continue to grow for size or for bloom, as you may fancy or require, and shift from one sized pot to another as the pots fill with roots, until the plant is as large as you wish; you have then only to let them flower when they will. When the plants have made the season's wood it will be well to let them be kept rather more dry, but gentle moist heat is their delight, and although they will bear almost any treatment so they be not too cold, and will also grow in a stove, they are far better in a dung bed than anywhere; next to this an orchideous house, and next to this a stove. The plant is an evergreen with shiny leaves, always looking well whether in flower or out. In dung beds they seldom have either red spider or bug, but in the stove they are very subject to both. The best remedy in such case is to put them in a new hot-bed of a temperature fit for cucumbers, water them frequently over the foliage, and let them have plenty of steam; but in a dung bed they are seldom infested with any thing. The compost, on which a remark or two may be made yet, should by rights be rotted turf, such as would be cut for lawns, rubbed through a very coarse sieve, for the double purpose of stopping any very large stones from going in, and picking out wireworms, grubs, and insects generally, which as they fall through the sieve are seen instantly—of this soil two parts; of peat earth also rubbed through a coarse sieve half a part; rotted cow dung half a part; and if this be too adhesive, a little silver sand, not exceeding in the whole a tenth of the mass, will temper it properly. This may lie together in a heap, covered from rains in general, but not allowed to get too dry. This same compost is good for almost all hard wooded plants but heaths, which require a good deal more peat earth in proportion to the loam. Any one who has a cucumber frame at work can get a few slips or cuttings of this plant by purchasing one at the market, for it is in constant demand at all markets; and by following these directions can without any other convenience raise healthy handsome specimens.

NEW GARDEN FRUITS.

SEVERAL varieties of fruit, which have but recently been raised or brought into notice, were described at page 95; the following notes are supplementary to the list there given. As will be seen from the description, some of those now enumerated are of considerable merit.

GRAPE.

Sahibee.—An East Indian variety, introduced to the Horticultural Society by Col. Sykes. It is cultivated by the inhabitants of the Deccan, and is an abundant bearer. The bunches are large, tapering, somewhat shouldered, like the Black Hamburgh, and as handsome. The berries oval, about the size of muscats, but without the muscat flavour; white, with a faint rosy tinge on the side next the sun. It is considered an acquisition.

PEAR.

Bergamot Seckle.—A variety of great excellence, raised recently by J. Williams, Esq., of Pitmaston, from the Seckle fertilized by Gansel's Bergamot. The fruit is rather small, roundish, and of a yellowish colour, brownish red on the exposed side, with a few russet patches; the eye small and open; the stem short and thick. Its flesh is yellowish white, juicy, melting, and sugary, with a little musky aroma; in fact, it may be kept till it becomes a ball of almost liquid nectar. It is in use early in November; and grows well as a standard. It is figured in *Maund's Fruitist.*

APPLES.

Vesuvius Pippin.—This variety has been incidentally noticed at page 188. It was produced at one of the meetings of the Horticultural Society, by A. Arcedeckne, Esq., who raised it from seeds which he obtained at the priory on Mount Vesuvius, where it is called by the monks Mela Appia. The fruit is small, oblong, contracted beyond the middle; in colour and glossiness resembling the Lady Apple or Pomme d'Api of the French. Its quality is excellent; the flesh crisp and juicy. In perfection in January, and may probably be kept till April.

Pitmaston Golden Wreath.—This variety is the result of a cross between the Golden Pippin apple and the Siberian Crab, the former being fertilized by the latter; and it bears ample evidence of its parentage. For it the horticultural world are indebted to J. Williams, of Pitmaston, well known as an experimental horticulturist. A more beautiful object amongst trees can scarcely be imagined than this variety of apple presents when laden with its produce, the branches being long, slender, and drooping, and densely crowded with fruit. The branches have much the character of those of the Siberian Crab, being long, slender, and not much branched, forming when laden with fruit a brilliant exhibition of pendent golden wreaths. The tree is quite hardy and very productive, but does not indicate the attainment of large size : it will be an excellent tree for miniature fruit gardens. The fruit is roundish, small, a fine yellow colour, with here and there a little russetty freckling, and a few red specks on the exposed side ; the segments of the calyx are long, and the eye somewhat furrowed ; the stalk long and thin, inserted in a narrow cavity ; the flesh is bright yellow, crisp, juicy, sweet, and pleasantly flavoured. The fruit should be gathered in September, and will keep for some time.

Spicy Globe Apple.—A local variety, almost unknown beyond the neighbourhood where it originated—Chaddesley Corbett, in Worcestershire. The fruit is handsome, rather below medium size, of an even depressed conical form, clear yellow green, deepened to an orange tint on the exposed side, and pencilled with deep red with a few russetty lines and touches, the eye small in a narrow basin, with a short connivent calyx ; the stem long, thin, and inserted in a narrow cavity. The flesh is yellowish white, mild, juicy, and moderately sweet, with a pleasant spicy clove-like fragrance. It is suitable either for dessert or kitchen use, and is in perfection in November. The tree is of small growth, and suited for dwarf culture. It is figured in *Maund's Fruitist.*

CHERRY.

Sweet Montmorency.—This cherry was incidentally noticed at page 189 ; it is an American variety, valuable from its lateness, being in use from the middle of July till the early part of August. The tree is vigorous and erect growing ; the fruit small, nearly round, growing in pairs ; when ripe, of a light red colour, pale amber in the shade ; stone very small. When ripening it is very bitter, but this passes away, and when fully ripe it is rich, melting, sweet, and vinous, with yellowish coloured flesh. It was an accidental seedling, and is supposed to have originated from the Montmorency Cherry, an early acid fruit.

STRAWBERRY.

Austen's Scarlet.—This strawberry appears to have been raised some years ago by the Rev. J. Austen, of Chevening Rectory, in Kent, but is even now little known. It is one of the best in the class of scarlets, being very early and prolific, and—in its class—possessing a peculiar delicacy, both in the consistence of its flesh and in its flavour. It was raised from seeds of the Downton. The most certain produce of the finest fruit is obtained by annual planting on rich soil. It is figured in *Maund's Fruitist.*

RASPBERRY.

Large-fruited Monthly.—Mr. Rivers, of Sawbridgeworth, who has grown this new autumnal fruiting raspberry, thus speaks of it :—“The variety is, I think, one of the most valuable introductions we have lately been favoured with in this class of fruits. It is, I believe, of continental origin. It continues to bear from the end of August, all through September, October, and if the frost is not very severe (it does not mind a slight frost) till the end of November ; and is quite equal in flavour, as well as in size, to Raspberries in July. To ensure a very abundant crop in autumn, all the canes should be cut down in spring close to the ground ; but a good autumnal crop may be obtained, as well as a crop in summer, by leaving only one cane, cut in the usual manner, to each root, cutting the others down closely for the autumnal crop. My plants are now (October) covered with fruit in all its stages, and many lateral shoots are just coming into bloom, so that if grown in large pots and placed under glass, Raspberries may be gathered in December.” This variety bears its autumnal crop from lateral shoots, which are put forth from every joint, forming a handsome pyramidal bush. In this respect, as well as in its superior size and flavour, it differs from the old variety known as the double-bearing raspberry. This will be quite an acquisition.

CURRANT.

Houghton Castle Red.—A large red currant which produces very handsome bunches, the racemes nearly six inches in length ; the berries large, of a darker colour than Wilmot's Red, but not so deep as the Red Dutch. The pulp contains more mucilage than is usual in red currants, and consequently the sharpness of the flavour is not so perceptible in the first instance ; it is indeed in this respect somewhat intermediate between that of the red and white currant. In size it is equal to Knight's Large Red ; but its principal merit is its late ripening. Some of the fruit in excellent condition were communicated to Mr. Thompson in the beginning of September, from the garden of the Duke of Cleveland at Raby Castle, Durham, whence it was named the *Raby Castle Currant:* it is also known as *May's Victoria.*

GLENNY ON THE DAHLIA;

ITS VARIETIES AND CULTURE.

The history of the Dahlia and its introduction have been so hacknied by most writers who have attempted to instruct us in its culture, that we omit all notice of either, except so far as to show that when introduced there were but few varieties, and these few all single. Of course, among botanists, different colours were treated as different species, as is usual with every thing that comes from a distance; but when the florists took the plant in hand all distinctions were levelled. The gentlemen who had been figuring three or four different colours as so many different species, were startled when the early seedlings in this country and in Holland produced varieties far more distinct from each other than those already figured. No plant ever yielded more readily to the florist's art, and with such success was it raised from seed in this country that all kinds of forms, sizes, colours, heights, and foliage might be found in one batch of seedlings, saved from the same flowers. As with botanists a very trifling difference would distinguish between two species, the wide distinctions to be found among the hundreds raised from seed, appeared like a practical satire on the minute descriptions of the botanists; and there were even those who condemned the doings of florists, and petulantly observed that such absurd multiplication of the varieties was destructive of the original species, and would lead to endless confusion. The botanists denounced the double varieties as monstrous, and for a time opposed the public taste, declaring that in double flowers all the botanical distinctions, beautiful as they were, would be destroyed. The Dahlia was for many years only single, and semi-double, but the Dutch florists at length obtained them very double, and from these importations seedlings were raised in France and in Great Britain, (for Ireland and Scotland did their part,) far surpassing in beauty those from which they were raised. At the period when the varieties were first becoming numerous, and Mr. Dennis, who was one of our earliest dealers in a large way, catalogued them by hundreds, there was every conceivable shape, size, and (excepting a blue) colour. There never was a subject so likely to be destroyed in value by the eagerness to multiply the sorts on sale, and the enthusiasm of the public to cultivate the largest collection. There was not at this time any notion about beauty—singularity was the first object, and brilliancy of colour went a long way towards making a flower singular. We had an early notion that a check might be put to the evil—which could not fail to disgust every body with the flower, at least if the wild and weedy sorts were encouraged, for we had already got globe-formed, anemone-formed, China-aster-formed, Hollyhock-formed, and we know not how many more—and the plan was to establish shows, to lay down the properties of a perfect flower, and act upon it. The first show was at Billingsgate, when a five-guinea cup was given as a first prize, and the money paid for entrances was divided into second and third. These were given for the best twelve double flowers, and all globes, anemone flowers, China-aster flowers, and all the other wild sporting varieties were excluded. The next show under the same auspices was at Hammersmith, when the first medals were issued in the name of the Metropolitan Society, not then fully organized. The result of this was the public abandonment of all but proper double flowers; and the publication of the properties of the dahlia in the *Horticultural Journal* banished all others from the garden, as well as from the shows, much to the annoyance of some dealers, who with an eye to profit exclusively had been buying up all the novel rubbish they could lay their hands on. The Metropolitan Society worked a complete revolution in floriculture, and especially took the Dahlia under its protection; for there were thousands of pounds changed hands yearly for that flower alone, and many persons were, by means of the impetus which it gave to public shows, benefited to a large amount, while the trade reaped the advantage from one extreme of Europe to the other. Thus much of the history of the Dahlia in this country may be interesting; and so it may be worth mentioning that Springfield Rival was the first flower that reconciled the generality of growers to the possibility of approaching the properties laid down. Mr. Widnall's Perfection was seized upon by the opponents of "the Properties," its distinctive character being a rosette outline, while the Springfield Rival was a positive circle. However, with these preliminary remarks, we will give an outline of the Properties we laid down for the perfection of the Dahlia, and the culture we adopted, although we have repeatedly done this before, and every writer who has pretended to instruct us since, has only changed our words to give the same lesson.

PROPERTIES OF THE DAHLIA.

1. The flower should be a perfect circle when viewed in front: the petals should be broad at the ends, smooth at the edges, thick in substance, perfectly free from indenture or point, stiff to hold their form; they should cup a little, but not enough to show the under surface; they should be in regular rows, forming an outline of a perfect circle, without any vacancy between them, and all in the circle should be the same size, uniformly open to the same shape, and not crumpled.

2. The flower should form two-thirds of a ball when looked at sideways. The rows of petals should rise one above another symmetrically; every petal should cover the join of the two petals under it—what the florists call imbricating, by which means the circular appearance is perfected throughout.

3. The centre should be perfect, the unbloomed petals, laying with their points towards the centre, should form a button, and should be the highest part of the flower completing the ball.

4. The flower should be symmetrical. The petals should open boldly, without showing their under side, even when half opened, and should form circular rows, uniformly laid, evenly opened, and enlarging by degrees to the outer row of all.

5. The flower should be very double. The rows of petals laying one above another should cover one another very nearly; not more should be seen in depth than half the breadth; the more they are covered, so as to leave them distinct, the better in that respect; the petals, therefore, though cupped, must be shallow.

6. The size of the flower, when well grown, should be four inches in diameter, and not more than six.

7. The colour should be dense, whatever it be—not as if it were a white dipped in colour, but as if the whole flower was coloured throughout. Whether tipped or edged, it must be free from splashes or blotches, or indefinite marks of any kind; and new flowers, unless they beat all the old ones of the same colour, or are of a novel colour themselves, with a majority of the points of excellence, should be rejected.

If the petals show the under side too much, even when looked at sideways—if they do not cover each other well—if the centre is composed of petals pointed upwards, or those which are round the centre are confused—if the petals are too deep and funnel-like—if the petals are too narrow, or exhibit too much of their length—or if they show any of the green scale at the bottoms of the petals—if the eye is sunk—if the shoulder is too high, the face flat, or the sides too upright—if the petals show an indenture, as if heart-shaped—if the petals are too large and coarse, or are flimsy, or do not hold their form—in any or all these cases the flowers are objectionable; and if there be one or two of these faults conspicuous, the flower is second or third rate.

If flowers are exhibited which show the disc, or a green scale, or have been eaten by vermin, or damaged by carriage, or are evidently decayed, the censors should reject them at once.

BUYING PLANTS.

These you may select according to the number you want, and give your orders early that there may be no excuse for disappointing you of any scarce sorts. The Garden Almanac will guide you well for a small collection, and you should be cautious how you add any without knowing something about them. It is better to increase the number of those particular sorts which it is desirable to make sure of in the stands: as a general rule, it is better to double or even treble the mottled or edged varieties; for there is a less choice than there is among selfs, and there is often a great scarcity.

PREPARING THE GROUND.

The ground should be dug, and if it will bear it, trenched as low as the soil is good, turning the bottom to the top. Procure your principal stakes, which should be six feet long, and drive them into the ground at their proper places, which should be six feet apart in the rows, and the rows six feet from each other, the second row being however driven half way between the opening of the first, so that they do not look so formal as if they were exactly behind each other, and besides which it gives them more room in the same space of ground: these stakes should be driven a foot and a half into the ground. If the ground has been well dressed, or is newly turned up—or has, in fact, good heart in it, plant without dung; if it has been impoverished, put a good spade-full of well rotted dung to each stake, and fork it into the ground to mix it well, in about a foot circle in front of the stake, and leave a hole in the centre, which must not be disturbed: place all the pots with their plants at their several stakes, and then go round with a trowel and plant the balls of earth six inches from the stake, sloping towards it, and the plant may be covered up to the depth of four inches, if necessary, without the least injury; and if the plants be lankey, they are the better for being covered up a little, and shortening the plant above ground. Water freely after planting, not merely at the plant, but a good way round it. Here a single loose tie, to protect them from the wind, is necessary, and any bandage or stick on the plant at the time of planting must be removed, for these ties will, if not removed, cut completely through the plant.

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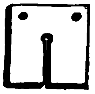
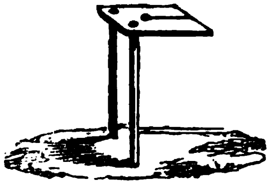
TRAINING THE PLANTS.

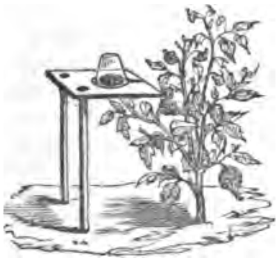
With good growth the Dahlia requires three more stakes driven down in angular form, as soon as the side branches make much growth, but the main stem is to be fastened to the centre stake. The branches ought not to be in each other's way, therefore, if this is likely to occur, remove the intruding shoot or branch; but never thin a plant for the mere sake of thinning. When the buds appear they may be and often are more numerous than ought to be permitted to bloom, but they should not be much thinned in their incipient state; as soon as they indicate whether there is a chance of their making a flower, the most promising may be kept for blooming, the least promising may be removed; any branch too beyond the flower should be taken away, and the end of the shoot on which there is a flower may be taken off: all small weakly branches may be cut out, so also may all branches that are in the way of more important ones. The flowers as they advance, according to modern practice, are fixed in a sort of table, made with a square board of half-inch thickness, with a slit just wide enough to pass the stem through, and holes at the corners to fix upon a leg or legs. The board, or table, is generally nine inches square, and made thus—



and when fixed on its legs, the appearance would be thus—



The bud intended to be protected is thus placed—



The slit is filled up with wadding, so as to prevent any kind of insect from getting through it, and the bloom is brought to maturity under a flower-pot or a glass, or a cover made on purpose, like an inverted pot without a bottom, and a cover and glass to fit, and to use according as the grower requires light or darkness for his flower. The extent to which this artificial mode of blooming has of late proceeded has tended greatly to produce flowers in an artificial state,—the colours and character are not then fairly developed; a tipped or edged flower will come plain, or with the tip or edging very indistinct; and they will neither last so long, nor travel so well, nor be so brilliant. If the object be merely to keep away vermin, it is paying a great sacrifice of beauty for the saving of a little sacrifice in labour. However, such is the practice; and nearly all growers do it for the sake of size, and a supposed, or perhaps real assistance to a centre naturally defective. During all the blooming time, as promising buds come out, they are adjusted into tables like these and covered, and while they are in an earlier stage they are tied up in a gauze bag. As soon as it is discovered that a bud is useless it must be taken off, and the same precaution taken with flowers as soon as they have gone by or become of no service; for it aids a plant much more than cutting away branches, which is by many carried to excess, so as to defeat the object, for we maintain that the perfection of pruning is to remove only the branches that are in the way and the buds that are not wanted.

TAKING UP THE TUBERS.

Dahlias in general are allowed to bloom too long: when they have exhausted themselves, which will be in October, and early planted ones sooner, so as to throw no more good flowers, the roots on which we rely for our next year's stock ought to have a fork or spade put under them, and be lifted enough to disturb them; the plants will then wither, and in a week from the time they were disturbed they may be taken up, cleared of their mould, their stems cut down to three or four inches in length, and the tubers be put into a dry place, to which neither heat nor frost can find access—the one would dry and shrivel them, the other rot them: the labels should be fastened with wire, for string of any kind will perish.

PROPAGATION.

There are several modes of increasing the Dahlia. For an amateur, who does not require many plants from each tuber, it will be enough to put the tubers in the warm stove, or in a slight hot-bed without planting or potting them, and sprinkle them occasionally with water; this will cause the eyes to start. The tubers may be then separated into as many pieces as there are eyes, each eye having a portion of tuber to it. There is no necessity for a large piece of tuber; it may be cut so as to go into a moderate sized pot, and be grown in the hot-bed stove, or even greenhouse; but the season at which they are separated must be selected according to the convenience. If there be no hot-house nor greenhouse, nor hot-bed, the roots may be kept in a basket near the kitchen fire, and there be sprinkled occasionally, until they are separated, which cannot be done with advantage until the eyes have all fairly started. This plan will generally produce as much increase as an amateur requires. Where there is no convenience for potting, plant them at once in the ground, with the crowns six inches below the surface. Those who desire a larger increase should pot them, and as the shoots get two inches long, carefully break them out, by pressing them backwards and forwards near the bottom; place them one each in thumb-pots, and put them in a hot-bed to strike, which, if kept moist, they will do in a few days, and continue doing this until there are enough plants; but if a large number is required, let the shoots all grow three inches long, and with a sharp knife cut them off just under the lower pair of leaves, which will cause numerous other shoots to come forward, fit for the same treatment, which may be kept on until any quantity required is secured; but it should be remembered that this could be continued until by excessive and rapid propagation the constitution of the plant would be changed, and very double varieties rendered semi-double, or even single. Nobody, however, who could procure pot-roots, however small, or pieces of tuber with a single eye, should ever use plants; for a piece of tuber with an eye, or a pot-root however small, will make a far better plant than even an early cutting. The cuttings as they are struck, should be put into a frame rather cooler, and by degrees be inured to a cold frame, previous to planting out.

DAHLIAS FROM SEED.

Sow in the early part of March; if in any quantity, make up a hot-bed and sow it lightly all over, but if not more than can be sown in pans or boxes, be it so. In a few days the seeds will come up, and will require a little air and occasional moisture; when they are large enough to transplant, you may either make up a hot-bed with rather slight heat, or use one whose strongest heat has gone by, and plant them out all over it two inches apart, or put half a dozen round the edge of a wide-mouthed sixty or forty-eight sized pot, and return them to the hot-bed. They will require air, and water, and light, but it will be as well to shade them from the heat of the sun until they are well established, and of sufficient strength to bear it without injury; the seedling plants must be treated in all respects like struck cuttings until planting time, except that it is not worth the trouble to put them in single pots at all, unless you have but very few, and those very choice: they may be planted out between the 20th and 30th of May, and not too shallow; a foot apart in the row, and the rows a yard from each other, is distant enough for seedlings in the ordinary way. As soon as they indicate worthlessness, which a large portion generally will, dig them clean up and destroy them; and when any appear promising, put stakes to them and tie them up properly, but there will in general be very few worth the trouble among ordinary seedlings. Where there is one which is an improvement upon the present varieties there are hundreds that are not, so that by looking very critically among them as they come into flower they will be rapidly thinned. Should there be any that are really good, you may take off side shoots and try to strike them; they will require a fresh hot-bed, which should be got ready in anticipation of the chance, and by putting the cuttings in singly in thumb-pots, and keeping a good heat, there is a chance of success; this is so desirable with anything really good, that it should never be neglected, because if a plant can but be made to bulb a little, or live through the winter, it will be a prize in the spring; and sometimes first-rate things have been known to be saved by such means when the old tuber has rotted.

PRESERVING ROOTS OR TUBERS IN WINTER.

We have already observed that tubers should be kept where neither heat nor damp nor frost can reach them, and there are many ways of doing this; some pack them in sand,—some keep them in a dry cellar,—some put them in the greenhouse. There are twenty ways of keeping a few, but where there are many there is more difficulty. It is common for valuable roots or tubers to be kept where they can be constantly examined, and common ones are often consigned to the greenhouse under the stage; but even here they ought not to lie in heaps, but spread out singly, or nearly so, that the wet, which cannot fail to sprinkle them every time the plants are watered, may dry quickly: this would seem to be a secure place, because it is imperative to keep the frost out on account of the other plants. The stems should be shortened to an inch, and when spread out on the ground, or packed up, or disposed of any other way, the stem should be placed downwards, for were the hollow stem to receive the wet, or even retain its own juice, it would be frequently found to rot the collar of the tuber, which would fail to break in the spring.

DRESSING THE FLOWERS FOR EXHIBITION.

However distasteful it may be to those clever artists who can almost double the apparent value of a flower by dressing it, we must protest against a growing evil that has deceived, and will so long as it is tolerated deceive, the purchasers of novelties, and dissatisfy those who do not practice such deception. It is already known that there is scarcely a worse fault than quilled petals; the back or rough surface of the petal is seen in front, the appearance of the flower is dull and un-uniform, and there is a fatal want of symmetry. Now, the clever manufacturer can, by insinuating the point of a tapering dresser into the opening end of the petal, and pressing it in gently, open it more, and by going over the flower repeatedly, so open the quilled petals by degrees that they appear as if they opened naturally; and a variety that would be condemned, actually appears pretty and passable, although a gentleman—who would never condescend to such questionable means—would never produce a flower like the dressed one in a dozen seasons. In selecting seedlings to name and propagate, for the purpose of adding them to collections, avoid such as do not open freely; for Societies will be obliged to adopt some measure to put a stop to the discreditable practice of opening the petals. In 1846, several varieties that had been exhibited in a very pretty and passable condition at different shows, and that were admired enough to tempt the inexperienced growers, were sold out at half a guinea, never to be worth sixpence to the buyer, and are now altogether discarded from good collections, as well as from the principal catalogues. It behoves, therefore, all persons who save novelties to observe that unless they open freely they are highly objectionable. The character bestowed on some very showy flowers of "quills too much," or "apt to be quilly," is a sad drawback to the value of a flower, and unless there be some very novel and desirable quality they should not be grown by people of limited means.

THE SAVING OF SEED.

Save no pods but those which have belonged to fine specimens of the bloom, and were for this purpose marked while in perfection, for it is greatly against seed to save it from imperfect flowers; yet nothing is more common than the practice of trusting to any pods that may be found, without knowing or caring from what flowers they originated. The number of hopeful seedlings would be greatly increased by the precaution of picking off all imperfect buds the moment their imperfections are discovered, and leaving for seed only those which are perfect enough to exhibit. There can be no harm in planting out some of the best varieties far removed from the remainder of the collection, so as to get a good variety of seed; but even here all the imperfect buds and flowers should be removed, and none but perfect ones allowed to produce pods. In this way, with a very good selection to begin with, there would be some hope of obtaining much better things than we possess.

GENERAL REMARKS.

The watering of Dahlias, like that of many other subjects, is of but little use unless the ground be well saturated for a good distance round it, or in fact all over, for the supplying of water at the root only is of very temporary benefit, inasmuch as the parched earth all round absorbs the moisture so rapidly that a very short time after it is applied it ceases to be beneficial. Many persons mulch round the stem with dung for some distance, but there are great objections to it; first, it is a universal harbour for earwigs and other annoying and destructive insects, and it is impossible to dislodge or get rid of them; next, it brings the fibres of the roots to the top of the soil, and when dry the plants suffer in a short time almost past recovery. It is far better to dung the ground well, plant rather deep, and water all the ground, in preference to wetting merely immediately close to the stem. Another bad practice is to water often and superficially, instead of seldom and downright well; when the ground has a good soaking and the water sinks deep, the roots will go after it, and do not suffer from every little change of weather.

There is a mode of grafting the Dahlia which it is hardly fair to adopt, because there is no excuse for it on ordinary occasions,—for a piece that would do for a graft would do for a cutting to strike. The evil arising from the grafting of a Dahlia is, that the tuber is not a representative of the variety, when taken up after blooming, and therefore a grafted plant would deceive a buyer. It has been said, too, that there is a way of cutting out the eyes at the bottom of the plant, so that the buyer is unable to calculate on propagating the following season; this, if it be done at all, is nothing short of a robbery, because a Dahlia is not worth the money charged except for the means of increasing it. We, however, do not believe in one half the practices which have been attributed to dealers; not that we deny such things have been done by an ill-principled man, but we believe it to be very rare, and by persons of no reputation. The grafting of a Dahlia is only justifiable when on account of a late season, or the chance of losing a variety, it may be desirable to propagate every morsel, and hurry the growth. A good sound tuber may be cut on one side, and a small cutting of a plant be fitted to it, and tied round with a piece of bast-matting and potted, so that the tuber and the portion of cutting fitted to it be under the surface. This will take readily to growth, and advance much more rapidly than if it were placed in as a cutting; but it is only a plant for the season. The tuber is useless, for it is necessary to cut away anything that would grow before it is used as a grafting stock. With this we close our general remarks, and proceed to lay down a few simple rules for each month's culture.

JANUARY.

The only necessary duty this month is to examine as far as practicable all the tubers, and if any indicate shrivelling or rotting, let them be potted at once, first removing every part that is decayed or decaying; and if there be any very choice, that it is desirable to start early, for the sake of extensive propagation, let them be potted. The collar of the plant should be above the surface, and that the pot may not be unnecessarily large, reduce the tuber by cutting away straggling parts and shortening the lobes, that the tuber may take up less room.

FEBRUARY.

Continue the examination of tubers, and besides any that may want immediate attention, pot those which may require to be most extensively propagated: you may also pot the whole collection by degrees, unless, as is frequently done, the bulk of them are to be planted in a hot-bed; for it is frequently desirable to place the tubers side by side in the soil of a hot-bed made for the purpose of starting them, but it is done to save room; otherwise potting is far better, as they may be easily removed to operate upon, take off cuttings, and strike them singly in pots of the smallest size but one—called thumb-pots.

MARCH.

Set all to work now, and examine all that are growing, daily, to take off the cuttings regularly as they advance; these when they become numerous may be struck several in a pot, as a striking heat must be greater than a simple growing heat after they are struck, and it may be advisable to take up as little room as possible; but if there be plenty of room to strike in, it saves a good deal of labour to strike them singly in the pots they are to be kept in till planting time. Sow seed in pots or in a frame and light, over a gentle hot-bed made on purpose.

APRIL.

Continue to take off cuttings and strike them, remove those already struck into a cooler hot-bed, or make up a new one to strike in, and continue those that are struck in the frame they were struck in, which will have declined a good deal. Of course in cases where a propagating house is used, and ample room afforded, it is only necessary to remove the struck ones to a cooler place or pit, and by degrees harden them off: air must be given to those which are growing, to prevent them from drawing up. Pot off seedlings, or thin them and prick out the spare ones.

MAY.

The plants are now ready to plant out or send out, but it is not safe to plant round London till after the 20th of the month, unless you cover up with a flower-pot with the hole stopped, at every indication of a frost, and always at sun-set; but after the 20th they are pretty safe, and when they are planted a proper depth, which is the crown four to six inches below the surface, they will always break out again, even if the frost cuts them down a little. Continue striking cuttings of all likely to be useful. Catch and kill earwigs by every means that can be devised, from the instant the plants are in the ground.

JUNE.

Plant out all the collection, some at the beginning, others for late blooms at the end of the month. Continue trapping earwigs, and examine the traps daily twice. Plant out the remainder of the seedlings in rows, the plants a foot apart, the rows a yard from each other.

JULY.

Add other stakes to the vigorously growing plants, and daily examine the earwig traps, and tie up growing branches; where any branches are growing in each other's way take off those that can best be spared, and whatever blooms come prematurely or imperfect pull off. Water only when it is absolutely necessary, and then do it effectually by well soaking the whole ground. If any seedlings bloom, remove the inferior ones the instant you can discover their blemishes.

AUGUST.

The flowers are now coming forward rapidly. Continue to kill every stray earwig. If the plants are grown for their beauty in the garden, they should be neatly and handsomely trained, but if they are grown for exhibition continue to remove all blooms which will not perfect themselves, and prepare to shade those which will be useful; place extra stakes where required, and where any particlar bloom is wanted for show remove the buds which are in its way, and so fasten it that none of the leaves or other flowers can touch it, even in case of wind. If the first blooms are to be covered, let them be fixed for that purpose. Examine the seedlings daily, to turn out those which are useless, and place stakes to any that seem promising. Side shoots of new varieties may be struck in a good strong moist heat.

SEPTEMBER.

Continue the treatment of last month in every respect, but remember that in shading, a bloom that has been uncovered is more brilliant, more lasting, and more desirable, because more in character, than those which have been constantly confined. A common shade made of paper, that keeps off the sun and gives the benefit of all the air, is most proper for use.

OCTOBER.

As the plants begin to exhaust themselves, or in the event of a frost, put the spade under the tubers and detach them from the ground a little without removing them altogether, and earth them up a little in case of severe frost: after they have been lifted a few days they may be taken up, cleared of their mould, have their labels fastened on with wires, and the stems cut down to an inch in length; they may then be put in a place well protected, to dry stem downwards. Seedlings worth saving may be taken up, and their description taken in a book or marked on their labels.

NOVEMBER.

Store the tubers where neither heat, frost, nor damp can touch them, and if practicable, where they can be examined from time to time; those roots which appear hardly matured should be potted directly. Pot roots are as well preserved in their pots as any how, the pots may be laid on their sides in any dry corner or place. Late struck cuttings may be kept growing.

DECEMBER.

Nothing can be done now but occasionally to examine the tubers, to see all is going on right. If any shrivel or commence rotting, or there is any danger of losing them, let them be set to work immediately, to get a cutting or two from them before they are quite gone.

A FEW GOOD DAHLIAS.

Antagonist, white, (Bragg;) Essex Triumph, dark, (Turville;) Admiral Stopford, dark, (Trenfield;) Mrs. Shelley, rose; Standard of Perfection, deep crimson, (Keynes;) Sir J. Stuart Richardson, rose shaded, (Sharpe); Lady St. Maur, white tipped, (Brown;) Queen of Roses, fine rose, (Widnall;) Nonpareil, deep scarlet, (Girling;) Bermondsey Bee, (Girling;) Beeswing, purple or claret, (Drummond;) Cleopatra, pale yellow, (Atwell;) Gloria Mundi, (Gebherd;) Lady Leicester, mottled orange; Sir E. Antrobus, rich red, (Keynes;) Princess Radziwill, white, with deep purple tips, (Gaines;) Marchioness Cornwallis, white, faintly tipped, (Whale;) Marquis of Aylesbury, rosy purple, (Spary;) Queen of Perpetuals, lilac, (Girling;) Captain Warner, shaded crimson, (Girling;) Biondetta, orange buff, shaded, (Foreign;) Athlete, rosy lilac; Beauty of Sussex, (Mitchell;) Princess Royal, straw tipped with purple, (Hudson;) Vanguard, shaded crimson; Queen of Sheba, blush or white, (Wilkinson;) Berryer, dark, (Turner;) Scarlet Gem, (Turner;) Yellow Standard, (Keynes;) Rosette, pale rose, (Girling;) Goldfinder, crocus yellow, (Bushell;) Victorine, pale rose, (Bushell;) Miss Vyse, white tipped, (Turner;) Lady of the Lake, white tipped, (Keynes;) Golden Fleece, buff orange, (Hansard;) Louis Philippe, crimson, (Turner;) Andromeda, dull yellow, with pink tips, (Collisson;) Star, very bright, tipped blood-red (Bragg.)

A FEW OF THE BEST FANCY DAHLIAS.

Admirable, Queen of the French, Coquette, Madame Watchy, George Clayton, Adolphe Dubras, Roi des Points, Minerva, Hermione, Ludwig Pemsl, Mad. Chauviere, Master Menzer, Ober Justizrath, Judy, Glory of Dahlias, Adonis, Miss Peel, Master Merryman.

THE NEW DAHLIAS FOR 1848.

The new dahlias for May next do not present very attractive features; there are very few, if any, first-rate, but many useful and some popular varieties. We shall not pretend to recommend one more than another, but endeavour to describe all that are to be submitted by the principal growers, or that have appeared at the leading exhibitions. If we omit any it will be for the want of the names being given, or the absence of any point worth mentioning.

The Queen of England.—A flower exhibited in an overgrown state, and therefore to all appearance above the medium size, and proportionably coarse, but very gay in colour, double and symmetrical, eye rather loose, face a little flat, deeply marked edge of rich lake. If we may give an opinion founded on its overgrown state, we should say that grown moderately it would be a very showy and useful variety.

Walter Hilson.—Grown over much, and therefore larger and coarser than it ought to be; a brilliant orange, brighter than any other of its class, outline moderate, petals small and close, very symmetrical, face rather flat. A flower that would be infinitely better grown of a moderate size, but evidently overdone at the shows.

War Eagle.—Colour bright red, outline pretty fair, the flower double and symmetrical, size medium or rather under, to all appearance likely to be a useful though not a very novel variety.

Nell Gwynne.—A buff or rather dull-shaded primrose, without being first-rate in any particular point, sufficiently good in most, to show as a variety; face tolerable, centre passable, altogether very distinct and symmetrical, and may prove a useful flower in a stand of twenty-four, where there is generally too many in a class.

Compacta.—Rosy lilac. A flower very little shown, good outline, well cupped, almost inclined to quill too much, but likely to be very useful in its class; size medium, colour desirable, and may be caught as an excellent flower, very double and tolerably compact.

Amy.—A tipped flower, very showy, the purple being distinct, and though not a first-rate outline, very likely to be useful on account of the scarcity of even second-class light flowers.

Belted Knight.—A sort of shaded flower, in which there are deepest yellow approaching to orange-salmon colour, and occasionally white. A fancy flower, very bold and showy, outline not first-rate, face inclined to flatness, but desirable on account of its novelty.

Hamlet.—A mottled flower, in which bright crimson predominates. One of the novelties of the season, which possesses, to a certain degree, most of the requisite qualities, without being extraordinary in any of them. A flower that will be grown pretty generally by exhibitors.

Boule de feu.—Bright scarlet, quills a good deal and petals scarcely touch, size medium, general form good, very double and symmetrical, centre a little sunk, and may be called a good thick flower; shoulder rising almost too much, which gives the fall to the centre.

Crocus.—A very bright yellow, average form, but nothing very extraordinary, size medium, tolerably double and symmetrical, centre pretty good, and the flower likely to be useful.

Danecroft Hero.—Claret, possesses a little of all the requisite qualities, but none in the highest degree; colour desirable, and a useful flower in a stand of twenty-four; tolerably double and thick, and the size medium.

Samuel Girling.—Bright puce or purple. Of medium size, outline and general form good, flower double and symmetrical, quills occasionally more than we like a good deal, so that in that state the petals do not touch each other, but likely to be very useful when grown well, for it has an excellent centre.

Helen Carr.—Blush-white tipped with pink. Of tolerable form, medium size, double and symmetrical; a pretty flower when well grown, and may be considered useful, the character we are obliged to give to too many flowers this season.

Jenny Lind.—Dark crimson-purple and pure white, petals full long, and a little rough, but a beautiful fancy flower of medium size, very double, with excellent centre, and symmetrical. May be placed among the best of the fancy flowers of the season.

Letitia.—Lilac-purple tipped with white. A very distinct fancy flower of average qualities, very pretty and very useful, but not first-rate.

Magpie.—A fancy flower, rather more quilly than we like, but very double, very dark, and the tips pink and white, but the white not always present, though the tips are always light. When the white comes perfectly it is splendid, but always distinct and showy.

Remembrancer.—A pinky-scarlet tipped or edged with white, very double and gay; distinct fancy flower, useful as a variety, and good average size and form.

Robin Hood.—Red and white, good average form, double and symmetrical, different shade from any of the good ones in its class of red and white.

Mont Blanc.—Large white flower, inclined to coarseness, not a circular outline, and petals a little rough, the centre good and well up, and for symmetry pretty good. The petals full large.

Primrose superior.—Pale yellow; ordinary flower, of no great pretensions, no great faults, possessing the properties in a moderate degree, but not first-rate; average size and form, eye a little low.

Negro.—A very dark crimson; may prove handy, but inferior to the present dark flowers, Berryer, Stopford, and Triumph in coarseness and general proportion; outline not first-rate, and centre a little low.

Preeminent.—White tipped with red, of secondary quality, form and properties below average, outline not round, a little coarse, and only pretty when at its best.

Lady Ashley.—Rosy lilac, size below medium, outline good, shoulder high, centre a little down, petals good and plenty of them; they quill occasionally too much, but the flower has not been well exhibited; generally very symmetrical.

Rob Roy.—A sort of fancy flower, crimson and yellow, below average size, moderately good form, double, and fair centre; may make a good change in a fancy stand.

Fire King.—Very brilliant orange scarlet, full average size, tolerable good form, quills a little more than we like, but is to be grown well, and when perfect a very striking addition to a good stand.

Delight.—A white flower richly tipped with crimson-purple, round, full, double, symmetrical and very striking, the most likely flower to follow in the steps of Marchioness Cornwallis, and beat everything in its class. It is thought by many to be the gem of the season, and if we could only buy one dahlia, that one would be Delight.

Miranda.—White with rose edges or tips, size below medium, very double and symmetrical, outline not first-rate, centre fair, and upon the whole a pretty, not a noble flower; a good front row.

Oracle.—White tipped with purple-rose, possessing a small share of all the points, but none in perfection. May be found useful where light flowers are scarce, but nothing striking in it.

Louise.—A pretty light flower, white with a little rosy tip or shade, without any first-rate claims as a show flower, but a perfect beauty as a plant, as dwarf and as abundant in its bloom as the old Globe crimson, with flowers occasionally showable and the colours very pretty.

Admiral Dundas.—Dark purple shaded with marone. A very neat dark flower, good when bloomed perfect, but we suspect a little treacherous in the eye, which, unless we be disappointed, will come open sometimes; when well grown, quite equal, perhaps superior, to Admiral Stopford.

Othello.—A dark flower in the way of Essex Triumph, with petals not quite so coarse nor so long, good centre, and face well rounded, outline only middling, flower double, symmetrical, size medium.

Gem.—A remarkably showy flower, white, tipped with deep rosy lilac or light purple, petals large, size of flower above medium, colours rather fleeting, but when perfect remarkably striking, after the fashion of the Maid of Bath, but every way better, rather open for the present day, but will be a useful flower when in good colour.

Brutus.—A rich crimson self, possessing a little of most of the properties, but not remarkable in any; has the appearance of being constant, size medium, and the petals pretty symmetrical.

Lady Sale.—A rich fancy flower, pure, yellow, and white tips, good average form, full medium size, double, symmetrical, and a good centre.

Bella Donna.—A fancy flower, a singular red with white tips, size medium, very double, symmetrical, and well up, outline not first-rate, but the flower is an acquisition.

Jeanie Deans.—A really fine and well-formed deep red and white fancy flower, very double and symmetrical, very distinct, and a pretty variety for one or half a dozen; size medium.

Fire King.—Bright red, not however so bright as the first Fire King we noticed, but much darker shade; size average, nothing remarkable in the form, but centre pretty good.

Maid of Honour.—A light blush with occasional shades of darker colour, without any very remarkable properties, a sort of common-place form, but very delicate colour.

Shylock.—A bright red flower, with every appearance of being constant and uniform; outline moderate, face and centre excellent, petals rather large than otherwise for the size of the flower, which is medium, and likely enough to be in every stand next autumn.

Canary.—A large dull sulphur yellow or canary-colour, very double and symmetrical, full average size, outline not perfectly round, centre very good, face rather flat than otherwise.

Attraction.—A rich shaded flower of dark and light purple or crimson, something like Bedford Surprise, treacherous in the eye, good general form, well up in the centre, and if the eye be not too apt to come cross, will be a rich variety.

Forest flower.—A large dark lilac, thick petals, petals large and coarse, every appearance of being grown too strong, and of being better adapted to moderate cultivation, outline moderate, face pretty good, and nothing amiss with the centre but being a little too flat.

Jane.—A blush white or paper white, shown too large and coarse, a fault which too many growers of the dahlia are now guilty of. Varieties which are very large, very coarse, and useless under very exciting growth, will come better formed, a better size, and more compact with ordinary cultivation.

Mrs. Shaw Lefevre.—A fancy flower of more than ordinary pretensions, a curious dull red tipped with white, size average, form excellent, very double, very well up on the face, and perfect in the centre.

Sir Robert Peel.—Dull red, good centre, size medium, or rather below, outline not very good, face middling, upon the whole no great acquisition.

Yellow Perfection.—Only two blooms shown, one all it ought to be, compact, round, full, symmetrical, good centre, and medium size; the other not so full in the face, shoulder higher, petals somewhat coarser, but outline just as good.

Eliza Meillez.—Fancy flower, of considerable novelty and merit, crimson and yellow, double, symmetrical, and highly useful to exhibitors.

Privateer.—Bright yellow with a blood-coloured edge, moderate outline, fair face and good centre, a likely flower to be useful.

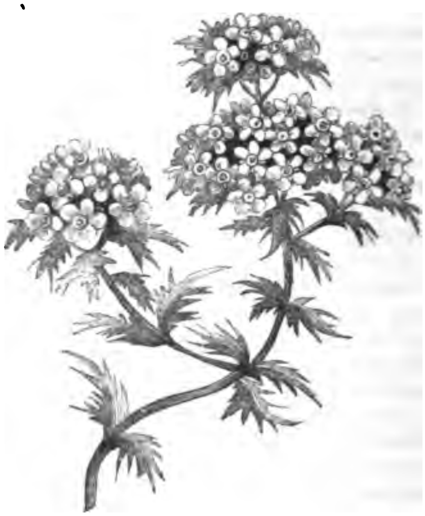
THE HYDRANGEA AND ITS CULTURE.

Few plants show so readily the advantage of good culture over ordinary growth, as the *Hydrangea hortensis:* in common it is a flowering shrub with a number of heads of pink or bluish flowers, handsome and tolerably lasting; with care and proper treatment it is a small plant with a noble bunch of flowers as large as a man's head, the individual flowers that form the bunches are as fine and as superior as the bunch itself. The plant is not hardy, but is at least what is called half-hardy; indeed, by protecting the roots with litter it may be grown like a fuchsia in the open air, merely cutting down the branches and covering up the plant with tan or other stuff to keep out actual hard frost, for a little will not affect it. They are to be grown two ways, one for the quantity of heads of bloom and the other for the size of a single head. The former way first:—As soon as a cutting is struck pinch out the eye, and thus induce side ones; as these advance pinch out the ends of them also, that they may in turn push out side shoots, and continue in this way stopping until you have as many branches as you want blooms; meanwhile you are shifting it into larger pots as the others fill with roots, and if any branches come out where they are not wanted they should be taken off. In this way the plant may make its full growth, and if it bloom the same season, well, if not, no matter; but at the fall of the year the leaves will drop, and the plant may be allowed to rest. As the buds begin to swell the plant may be repotted in a pot considerably larger than the one it has filled, and it may be set growing. Remove all the small branches that look weakly, and shorten any that have grown uncouth and out of shape and keeping with the rest of the plant; gentle heat will force them earlier, but the greenhouse is the proper place for healthy growth; let the plant have plenty of air and light, and it will continue to grow fast without drawing;

but if you neglect these two points the plant will become drawn and awkward and not support its heads of bloom well: the flower will soon show, and the watering must be attended to very regularly all the time the heads are swelling and the flowers developing themselves. If the green-house light is only in front, the plant should be turned every two or three days all the time it is growing, otherwise it would get one-sided and ungainly. The flowers of the hydrangea are growing the whole time they are on the plant and in colour, but when that begins to fade into a green like the leaves of the plant, they grow no more. On this plant you may have as many heads as you please, but you can never form the heads so large as when you grow only one upon a single stem. As a garden ornament the hydrangea is very noble, and there are few subjects prettier than these plants in a border. They may be turned out of pots as early as May, and will grow far better than even in pots if the stuff they grow in is good. Cuttings may be taken in the autumn, and being cut up to a joint may be struck in a cold frame; when potted out singly into pots of the size forty-eight, they may be allowed to grow with a single shoot, and the other buds should be rubbed off before they can grow to weaken the plant. As soon as the pot is filled with roots change it for a size thirty-two, and after that to a twenty-four, in which a single head will perfect itself well. With regard to the stuff in which they are to be grown, it is usual among those that fancy them much, to have them in different composts, some grown in loam and dung half and half, others with loam-peat and dung in equal portions, a third peat and dung only. The flowers will be differently shaded in these three composts, and some will be weaker than others, but the different style of growth is pleasing where people want a variety. With respect also to the colouring of the blooms, we have seen the same pot of cuttings produce, in turn, blue and bright pink, without being able to fix upon the agent which caused the change, but we have suspected it to be in the peat earth, because those planted in the common borders grew well and bloomed with pink flowers, and those which were in the peat bed among Americans had blue, and very strong blue; it was natural therefore to infer that there was something in the peat that had the effect of changing the flowers to a blue. Many recipes have been given by various gardeners for turning the flowers blue, but up to the last we have seen every one fail, and also seen the plant give blue flowers with the recipes applied, but that there is some combination, at present unknown, is quite certain; and we know from repeated trials by ourselves and others, that all the known means applied one year when the flowers have come blue, have been applied the very next year and failed, so that there is no certainty at present, although experiment will some day reduce the matter to a certainty. When these plants get large all the branches must be pruned back, that it may throw out young shoots all over, and be a well-furnished plant every year. If planted in the garden in the middle of a clump, or on the lawn, a regular frame-work of good strong willow sticks should be placed over it, that it might be matted through the hard weather: it will save a good deal of the wood that might otherwise be cut down in a severe frost, and when the plant is springing, pruned afterwards, in a way to form a good bold bushy plant, the large size it acquires in two or three seasons is astonishing, for when it once lays hold and establishes itself in ground that agrees with it, the plants soon become enormous bushes: all that need be done is to cut in all the branches, to clear half or a third of the quantity of eyes, that they may all be induced to shoot. There is scarcely any thing looks more showy than a very noble bush of it in good flower, and we have seen them ourselves with three hundred heads of bloom, the bush being six feet through, all bushy alike to the ground, and a head of bloom at the end of every shoot both principal and lateral. It is worth mentioning one more circumstance in connexion with the colour of the bloom; a plant was put out on the lawn, a hole being made by taking out nearly a barrow full of loam, half of this was mixed with as much peat earth, and the plant placed in it; for two seasons it bloomed blue, the third season it had become very large and all the blooms were pink: our conclusion was that the peat made it blue, and that it had now got through that into the plain loam, and thus resumed its pink. There is no doubt something in peat which causes the change, but then all peat is not alike.

DATURA ARBOREA; ITS CULTURE.

The old *Datura arborea*, now often erroneously called Brugmansia, is one of the most showy plants in cultivation; and with its white funnel-shaped flowers, borne in profusion, and hanging pendently from all the branches, forms one of the most pleasing objects in the conservatory or on the lawn. The pendent disposition of the blooms renders it best as a standard, and the same may be said of the other kinds, *D. sanguinea* and *D. lutea*, though their flowers are not half so interesting; there is, however, a double white called, *Knightii*, that is very curious and interesting, and should be grown in a collection. These Daturas are rapid growers, succulent, and with large foliage; the best way of propagating them is by eyes, the same as you would propagate a vine. Take the last year's wood,—in fact, when the plant has done growing and flowering and the leaves fall, the branches have to be cut back to some tolerably graceful form. When they have once attained a good size, they should be preserved as if they were roses upon a large scale; the branches may be pruned to two or three eyes, or even closer than that. The whole of the last season's growth may be cut into eyes, that is one with half an inch of wood to it. These may be potted and placed in moderate bottom heat, one in a small pot, or more in larger ones, and perhaps a good many in a larger pot would be more convenient as regards room. These must be kept moist, but not wet, and in the course of a few weeks they will begin to grow and strike root. They need not be forced along too much during the winter, but towards the spring they may be potted one in a pot of the size forty-eight, and should be set growing rather briskly in the stove, and if the tan be not too hot, they will be better for plunging; they will soon shoot up, and the side buds as they appear should be pinched off, except always the three or four nearest the top. When the stem is as high as you wish for the upright of the standard, which should not be less than two feet clear of branches, and may be as much more as you please, you pinch out the top, but you must bear in mind that the side buds are to be rubbed off or pinched off as high as you mean the trunk to be to the lower branches, and if this be two feet, your plant will be nearly three feet high, because you are always to leave three or four eyes not pinched out above those that you have taken away, because they are wanted to form the head; when the top is pinched out the three or four side or lateral shoots not pinched out will grow fast; we ought, however, to have observed, that from the time they are first potted you must keep continually shifting to larger pots as fast as the roots reach the sides of the one they are in, and the shifts should be all larger than one size, for instance, from forty-eights you miss thirty-twos and use twenty-fours—from twenty-fours to sixteens, then to eights, and lastly, to what are variously styled by the different potteries, but fifteen to eighteen inches across. The progress of the plant after the top is taken off is rapid, if the heat be genial, and as the season is advancing they become more robust. When the lateral shoots are three inches long, you may pinch out the ends of these in the same way as you did the top of the plant; and now they will each throw out other branches, enough to form a head; these are to be kept growing until the plant flowers, merely taking away any of the shoots that are in the way of other shoots, or grow in cross ways, or spoil the shape of the head. They are not to be stopped any more, but be allowed to grow in the stove until they are on the eve of blooming, when they may be first removed to the coolest place, and then into the conservatory, where they will perfect their flowers, filling the place with their fragrance, which is very powerful, and continue to grow and bloom for a long time. The other varieties, with their red, orange, and yellow flowers, are not of such rapid growth, quite, but they require the same treatment. They grow best in loam, peat and cow-dung, or for want of the latter, the dung from an old melon bed, two parts of the first and half a part of the two latter; but this is supposing the loam to be what every florist ought to get at any cost, the turf from a loamy pasture, laid by till it is rotted, the loam is then so enriched with vegetable earth that it will grow any thing,—but succulents will grow better, as well as any thing else, for a little peat earth and cow-dung; should the mixture appear too adhesive, which is not very likely, a little silver sand will correct it. If the plants are designed for the lawn, the most protected place must be selected, for the wind is a great enemy, the foliage being very large, holds it a good deal, and is far easier broken than that of a dahlia. Standards are the best any where, but it is a common thing to grow the plants for out of doors, as you would a dahlia; let it take its own course; do not pinch out the eyes, but let the side branches grow as well as the top ones. They should not be planted out till the end of June, and they will require stakes to support them. The first year the plants are sometimes too tender to flourish well; if the winds or the nights be cold they appear to receive a check which spoils their growth, and they are best, perhaps, continued in the house until you observe the bloom buds coming small at the base of all the leaves; then they may be hardened off a little in the greenhouse, and next planted out in the most sheltered of the spots intended to be planted with flowers. They may be shifted into a larger pot, and plunged in the ground, or put out in the open ground without a pot, as the cultivator may please. The only thing is, that if they are required to be potted up again to be kept over the winter, there is less trouble when they are plunged in their pots than when they have been allowed to ramble without bounds. At the end of the season, and previous to the frost coming, they should be taken up and housed. If there are many they may be removed with their balls of earth and packed up close together on the ground, allowing no more water, and when all the leaves have fallen they may be cut back, root pruned, and potted in fresh soil, gently watered, and placed again in the stove,—or the ground at the back of the pit will do until their buds swell, when they may be placed in the light. Very little more than the stem should be left when they are pruned, because the branches of the season are always enough for the head; by cutting all the branches back to two or three eyes it enables you to select from the great number of new branches those which grow in the best direction to form the head handsome, and the rest are to be removed close with a sharp knife. There is nothing to do afterwards this season but to let them grow, just checking the exuberance of any unruly branch that becomes conspicuously vigorous. Those plants which are bloomed in the house are merely removed when past their beauty to some place where they will be least in the way, and when they drop their leaves they are pruned and kept rather dry, until the growing time comes again. We have confined our remarks to the *Datura arborea*,—but although we have done so, *sanguinea* (bicolor), and *lutea* will do well with the same treatment, although rather different in habit, and totally different in the shape and colour of their flowers. *D. arborea* has very large funnel-shaped flowers, with a bold handsome open mouth; and the double white is a good deal like it; but the other two are tubular, with a slightly enlarged and turned up limb; the bloom is about the same length, but the same size all the way down the tube, and the lip very little enlarged and turned out, showing a small portion of the inner surface. It has been said there is a difference in the degrees of hardness, but we have had all four varieties under the same treatment, answering equally well; but we have found the blooms always more abundant from a matured plant than from the first year's, although they bloom the first year from an eye very well. They are ill-growing plants if not annually attended to in the pruning, which is as requisite to the Daturas as to any plants we know, for they would grow confused and unmanageable, too thick with branches, weakly, and perhaps scarcely throw a bloom where there ought to be a dozen. There must be some pains taken to keep them from the red spider; but this applies to all the plants in the stove, and what will cure one will cure another, but uniform heat, occasional moisture, sulphur and water now and then sprinkled on the pipes, and if necessary syringed under the leaves of the plant, will prevent this. Red spider, however, rarely does mischief; the plant, when neglected, is subject to it, and it may be looked upon rather as the effect of bad health than the cause. It is no use cleaning a plant unless it be got into health again.



TRIPTILION SPINOSUM.

(*Ruiz and Pavon.*)

THE SPINY TRIPTILION.

This is an uncommon plant, though it has been for some years introduced. It is, nevertheless, a plant of very considerable beauty, so that its rarity must be attributed either to the difficulty attending its cultivation, or to the slow means of propagation which it affords. Both these causes have, probably, had some share in limiting its cultivation; for, on the one hand, though cultivable, it is decidedly one of those which are commonly called "shy growing," or "miffy" plants; and, on the other, it does not afford such facilities for propagation as is usually met with in herbaceous perennials, to which class of subjects it belongs. We must, however, recommend it to more extended notice, for the colour of its gay and brilliant blossoms can scarcely be dispensed with among pot plants required to bloom during summer, and their permanence is a great additional recommendation. The following remarks, it is hoped, will serve to do away, in some measure, with the difficulties which have been supposed to hang around its cultivation.

As already remarked, it is a perennial herbaceous plant, attaining, when full grown, about the height of two feet. It has a thickish fleshy root, somewhat in the way of those of the dahlia, but altogether smaller. The stems are numerous, slender, decumbent, and flexuose, and everywhere clothed with hairs. The leaves are of two kinds; the root leaves, that is, those which proceed at once from the crown of the plant, are pinnatifid, and spring up in autumn after the flowering stems have died and been removed, remaining during winter, and perishing either in great part, or altogether, before the plant again reaches its blooming condition; the stem leaves are mostly very deeply cut and jagged; irregularly placed along the stem, and without stalks, the segments as well as the point of the leaf being armed with a long stiff spinous point. The flowers grow at the top of the stems in densely crowded fasciculated corymbs; they are syngenesious, or composite, and each consist of five two-lipped florets, the outer lip of a most beautiful and enduring blue colour, and the inner lip small and yellow; these florets are arranged so as to form a small roundish "flower," as it would be popularly called, but more properly a "capitulum," or flower head, for each of the five florets are equivalent to the parts which in other plants are understood as individual flowers. Sometimes, in the case of cultivated plants, these flowers are succeeded by seeds, but usually seeds are but sparingly produced.

The present plant has a considerable geographical range, being found near Valparaiso, the city of Conception, and as far south as between Valdivia and Osoro, in fields and plains. It is a great favourite with the inhabitants of Chili, on account of the enduring colour of its blossoms; they term it, *Siempreviva*, and employ it extensively for ornamental purposes. It was first raised in England in 1827, by Mr. Frost, gardener to the Countess of Grenville, at Dropmore, but had previously been known for a long time to Botanists. It blooms about the month of July. Besides the name here adopted, it has been called *Naussauvia spinosa* (Don), and *Triptilion laciniatum* (Willdenow).

The greatest difficulty in the artificial cultivation of this plant lies in its safe preservation during the winter, not, however, so much from the effects of cold, (for it will bear even some degrees of frost without injury,) as from the effects of the dampness and closeness of the atmosphere, which at that season is more or less felt by all delicate plants. The effort required, therefore, is to keep it from what is technically termed "damping off," that is, becoming mouldy and decayed. To have a fair chance the grower should commence with a strong and healthy plant. After the flowers and their stems have decayed, the plants should be repotted; they should be taken out of the pots they have been kept in, the old soil partially removed with great care from among their roots, and then repotted into as small a pot as the size of the plant and the number of roots may allow; three-inch pots would in most cases be large enough, unless, indeed, the plants form—for so rare a subject—very large masses: the soil used should be sandy loam, mixed with about a third of good clean leaf mould; the pots must be well drained, with a large crock, and an inch or more of smaller ones, covered with a little rough leaf-mould. The plants should be potted rather high in the pot, that is, their base should be nearly level with the rim of the pot, the soil sloping slightly to the outer edge. After this potting, which will take place in September, the plants must be set in a cool dry frame, where they may be sheltered from rains, and in due time from night cold, but they need not be kept very close, so that they are protected in these respects. In October remove them to a front shelf, near the light, in a *cool* greenhouse, where they may get air whenever it is admitted. This is safer than a pit, although, if they can be secured from damp and severe frosts, a pit will preserve them equally well. Continue this till spring advances. During all this time water them very carefully; take care to let them become moderately dry—not so dry as to droop—before a fresh supply is given, and then give them just enough to thoroughly moisten the soil, and see that it drains readily away. In spring, when these begin to grow freely, they may be shifted into pots a little larger, still very carefully watering them, and keeping them in a light airy position. As summer draws on, the lower leaves are apt to perish, which is probably owing, in some measure, to the dry hot atmosphere to which they are then exposed: at this period, therefore, a cool frame would certainly be preferable for them, in which they may be shaded during the hottest part of the day, and the material they stand on sprinkled, so as to keep them cool; at night, and at all other times, they should have abundance of air. If the pots get full of roots—not else—before the blossoms are much advanced, they may have a larger pot; but a five-inch pot will be large enough for a plant of considerable age and strength. We should, however, recommend the plants to be grown in considerable masses, instead of being too frequently divided into a number of smaller plants, the effect of the larger specimens being infinitely preferable to that of small puny scraps.

Propagation may be effected by division of the plant as mentioned above; and this should be done early in the autumn, or as soon after flowering as possible, in order that the plants may get well established before winter: these plants would subsequently require the treatment already sketched out. Whenever seeds are produced, they should be sown as soon as ripe enough, in pots of sandy soil, and placed in a close pit or hot-bed to induce speedy germination. The young plants, as soon as fairly developed, should be transplanted singly into small pots, using very light sandy soil;

and they must be kept in the same place until they are fairly established, when they should be gradually brought to bear the treatment of older plants, being shifted into larger pots when requisite, and kept during winter in a dry part of the greenhouse. In the spring they may receive the treatment of mature plants. Both these means of increase are, however, very tardy.

The plant is stated to be intensely bitter; and to prove a valuable remedial agent in many diseases—we presume in its native country.

THE HOLLY TREE.

We are so accustomed to see the Holly growing as a scrubby bush, either in the hedge-row, or among thick masses of shrubs, that the idea of a Holly *tree* is in general not very distinctly impressed on the mind. And yet among the smaller trees, there is scarcely one so beautiful as the Holly when old enough to display itself in this character, and standing alone, so as to assume its own proper mode of growth.

The prickly character of the evergreen foliage of the common Holly is well known. It sometimes happens that when the plant has been allowed to assume the arborescent habit, the upper leaves are for the most part either entirely without prickles except that of their mucronated apex, or are much less prickly than ordinary. This has given rise to some very elegant lines of Southey's, which are well known. The image of the poet is however rather a constrained one, inasmuch as the foundation upon which it is built is not constant. Something of this kind of habit may however often be observed.

Speaking of this tree, Evelyn in his *Sylva* observes:—"Above all the natural greens which enrich our home-born store, there is none certainly to be compared to the Agrifolium, or Acuifolium rather, our Holly [*Ilex Aquifolium*], insomuch that I have often wonder'd at our curiosity after foreign plants, and expensive difficulties, to the neglect of the culture of this vulgar but incomparable tree, whether we will propagate it for use and defence, or for sight and ornament." "The timber of the Holly (besides that it is the whitest of all hard woods, and therefore us'd by the In-layer especially under thin plates of Ivory to render it more conspicuous) is for all sturdy purposes; the millwright, turner, and engraver prefer it to any other."

We recommend the Holly to be more frequently planted as a *tree* in the conspicuous parts of lawns, shrubberies, and pleasure grounds, either singly, or in combination with others to form a group. It will grow in almost any soil and situation, but prefers a loamy soil.

NOTES ON FLOWERS AND FLOWERING PLANTS.

Heliotropium peruvianum, *var. Voltaireanum* (Voltaire's Heliotrope).—Ehretiaceæ § Heliotropeæ.—This is a very beautiful and distinct variety of Heliotrope, differing only from the common kind as respects colour. The leaves are deeply and strongly tinged with purple, and the flowers are of a deep clear purple, and very fragrant. It is a garden hybrid, raised at Voltaire's residence at Ferney, near Geneva, and was introduced to this country about 1846. Flowers at various periods of the year. *Culture.*—Half-hardy; rich loamy soil; propagated freely by cuttings.

Habranthus roseus, *Sweet* (rose-coloured Habranth).—Amaryllidaceæ § Amarylleæ.—A small growing bulb, with narrow glaucous strap-shaped leaves, and a stem three or more inches high, bearing two large flowers at the top; the flowers trumpet-shaped, expanding wide, composed of six segments, rose-coloured, with a green base. A native of Southern Chili, in the island of Chiloe. Introduced in 1828. Flowers in June. *Culture.*—Nearly hardy; requires a hot dry situation, free loam, plenty of water while growing, and continued rest afterwards; propagated by offsets or seeds.

Crocus asturicus, *Herbert* (Asturian Crocus).—Iridaceæ.—A small interesting bulbous plant, agreeing with *C. pyrenæus* (nudiflorus) in producing its offsets on runners, but smaller in all its parts, and flowering a month later. It has purplish flowers, and an orange-coloured style. Native of the hills of Asturia, near Gijon and Santander. Introduced in 1845? Flowers in the autumn. *Culture.*—Hardy; common soil; propagated by offsets from the corms.

EUCALYPTUS MACROCARPA, *Hooker* (large fruited Gum-tree).—Myrtaceæ § Leptospermeæ.—A very handsome shrub of the larger order, that is to say, growing several feet high; at Kew, plants five years old and five feet high, have blossomed freely. The plant is everywhere covered with a glaucous white powdery substance, and the young branches are four-sided: the leaves are numerous, opposite, elliptic-ovate, or cordate, three to four inches long, the base half clasping the stem; the flowers are solitary and axillary, nestled among the leaves; they are red, entirely without petals, the conspicuous portion being a large tuft, more than two inches across, of highly coloured threads or stamens. Native of Guangan, an open sandy desert in New Holland, where it is called *Morral* by the aborigines. Introduced in 1842 to the Botanic Garden, Kew. Flowers in summer. *Culture.*—Requires a large greenhouse; very suitable for a conservatory; loam and sandy peat, and plenty of pot room; propagated by cuttings, not too ripe, planted in sand under bell glasses. (270)

TRITONIA AUREA, *Pappe* (golden Tritonia).—Iridaceæ.—A very beautiful plant, with roundish bulbs, which send out offsets from clefts in their sides. The stem or scape, which is two-edged, grows from a foot and a half to two feet high, furnished in the lower part with long narrow sword-shaped leaves, arranged in two rows, and in the upper part becoming branched into a largish panicle. The flowers are of a very striking rich deep orange colour, and are produced abundantly; they consist of a slender tube about three-fourths of an inch in length, with a limb of six oblong segments, expanding widely, the three outer segments being somewhat the smallest; from the centre of the flowers project the three long stamens, and the three-cleft style. Native of Caffraria, in the colony of the Cape of Good Hope. Introduced in 1844 by Mr. James Backhouse. Flowers in the latter part of summer. *Culture.*—Half-hardy, a splendid plant for a bed in the flower-garden, the colour being rich and rare; turfy peat and sandy loam; propagated by offsets from the roots. (271)

DENDROBIUM CRETACEUM, *Lindley* (chalk-white Dendrobe).—Orchidaceæ § Malaxeæ-Dendrobidæ.—A neat and distinct epiphytal species, with slender stems, and thin lance-shaped leaves, the flowers growing from the mature naked stems opposite where the leaves had been; they are produced singly, although the plant is stationed in a group of the genus which is said to have the flowers in pairs, or in threes. The blossoms are remarkable for their dull chalky whiteness, the tip being, however, elegantly pencilled with crimson; the sepals and petals are lance-shaped, and the hood-like lip is covered inside and outside with short close white fur. Native of India—Moulmein, Mergui, and the Khasiya hills. Introduced in 1840. Flowers in July. *Culture.*—Requires a stove; turfy peat soil; propagated by dividing the plant. (272)

IRIS AUREA, *Lindley* (golden Iris).—Iridaceæ.—A herbaceous perennial plant, having the habit of and some affinity to *Iris ochroleuca.* It has sword-shaped leaves, and produces several blossoms at the top of the stems; they are of a deep golden yellow colour, and have a showy character. Native of India [North?]; raised by Messrs. Whitley and Osborn of Fulham, from Indian seeds, presented to them by Dr. Royle. Introduced in 1841. Flowers in July. *Culture.*—Hardy; common garden soil; propagated by dividing the plants. (273)

VANDA TRICOLOR, *Lindley* (three-coloured Vanda).—Orchidaceæ § Vandeæ-Sarcanthidæ.—A handsome epiphytal species, with long strap-shaped, distichous grooved foliage, and bearing lateral racemes of a few large handsome flowers, the sepals and petals of which are greenish-yellow, dotted and blotched with cinnamon-brown, and the lip rose-coloured, its lateral lobes being rounded and colourless. It has the habit of *Vanda Roxburghii,* and is still nearer related to *Vanda Hindsii,* a species of New Guinea not yet in cultivation. Native of Java. Introduced in 1845. Flowers in the autumn. *Culture.*—Requires a moist stove; to be attached to a block of wood, or planted in an open basket, and suspended; propagated by division of the plant. (274)

ODONTOGLOSSUM MAXILLARE, *Lindley* (maxillæ-lipped Toothtongue).—Orchidaceæ § Vandeæ-Brassidæ.—A beautiful epiphytal plant, which might be readily mistaken for *Odont. Cervantesii,* which it much resembles in its blossoms. The sepals are acutely lance-shaped, the petals broader, blotched with red on a white ground; the base of the lip is similarly marked. The present plant is known by a very large yellow appendage, which is seated at the base of the lip. Supposed to be a native of Mexico. Introduced about 1846. Flowers in September. *Culture.*—Requires a cool stove; turfy peat soil; propagated by division of the plant. (275.)

ERIA CONVALLARIOIDES, *var. major* (large close-headed Eria).—Orchidaceæ § Malaxeæ-Dendrobidæ.—This variety is much handsomer than the original species. It has a compressed stem, bearing at top three or four oblong lance-shaped leaves, beneath which are situated the dense drooping racemes of small white flowers. Native of India. Introduced about 1844? Flowers in —? *Culture.*—

Requires a moist stove; turfy peat soil; propagated by division of the plant. (276)

TROPÆOLUM UMBELLATUM, *Hooker* (umbellate Indian Cress).—Tropæolaceæ § Tropæoleæ.—A very remarkable and beautiful addition to this elegant and favourite genus of climbing plants. It has a tuberous root, said to attain three or four pounds weight; a slender zigzag stem; remote, sub-peltate, deeply five-lobed leaves, the lobes of which are ovate-obtuse and mucronate when young; and axillary umbels of five or more flowers of a rich orange-red colour, so copious as quite to overpower the foliage. The blossoms are upwards of an inch long; the calyx cylindrical, extended at the base into a slightly curved blunt spur, orange-red tipped with green at both extremities, the limb being yellowish; the petals, three of which project considerably beyond the calyx, are red, contrasting favourably with the yellowish limb of the calyx. Native of Quito, where Professor Jameson originally found it on Pilzhum, a mountain 7,000 feet above the sea, to which locality it seems peculiar. Introduced in 1846 by Messrs. Veitch. Flowers during the summer. *Culture.*—Half-hardy, though suitable for pot culture in the greenhouse, or for a conservatory; sandy, turfy loam, not too rich; propagated by cuttings or by seeds? (277)

FUCHSIA DEPENDENS, *Hooker* (dependent Fuchsia).—Onagraceæ § Fuchseæ.—A handsome shrubby plant, bearing some general resemblance to *F. corymbiflora*, but quite distinct. It is a vigorous grower, with a diffusely branching, elongated, somewhat scandent stem; the leaves are acutely ovate, usually growing in whorls of about four, and somewhat hoary on the under surface; the flowers are numerous, and grow in dense terminal, drooping, leafy racemes, the calyx tube being long and slender, the sepals and petals oblong; they are of a lively vermilion colour, the tips of the sepals being of a duller tint. Native of South America. Introduced in 1840 by Messrs. Veitch. Flowers in autumn. *Culture.*—Requires a greenhouse; rich turfy, loamy soil; propagated by cuttings. (278)

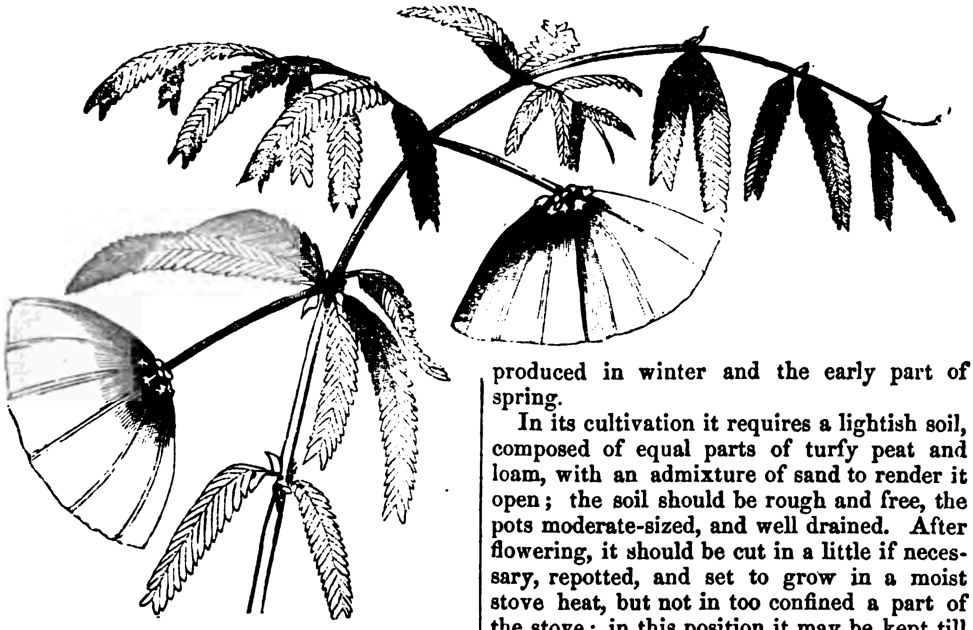
SALVIA OPPOSITIFLORA, *Ruiz* and *Pavon* (opposite-flowered Sage).—Lamiaceæ § Monardeæ-Salvidæ.—A neat and showy sub-shrubby species, growing from one to two feet high, the stem procumbent at the base, and the branches erect. The leaves are obtusely ovate, somewhat cordate at the base, and wrinkled, downy, and crenulate. The flowers grow in whorled racemes, the verticillasters being two-flowered and secund; they are showy, and of a beautiful light scarlet colour, downy on the outside; the calyx tube is striated. The plant is endued with a grateful odour, whence it appears to have derived a synonyme—*S. grata* (Vahl). Native of Peru in arid and exposed places. Introduced in 1846 by Messrs. Veitch. Flowers in autumn, *Culture.*—Requires a greenhouse; rich, light, loamy soil; propagated by cuttings. (279)

CALCEOLARIA CUNEIFORMIS, *Ruiz* and *Pavon* (wedge-leaved Slipper-wort).—Scrophulariaceæ § Antirrhinideæ-Calceolareæ.—One of the smaller sub-shrubby species, with erect downy stems branching at right angles. The leaves are small, ovate, somewhat oblong, and wedge-shaped at the base, deeply crenated, the upper surface hairy, and the lower pale and woolly. The flowers grow in rather loose, few-flowered cymes, and are of a pale lemon colour, but in healthy plants are freely produced. Native of Bolivia and other parts of South America. Introduced in 1846. Flowers in autumn. *Culture.*—Requires a greenhouse; turfy loam and leaf mould; propagated by cuttings of the young shoots planted in sandy soil. (280)

PLUMBAGO LARPENTÆ, *Lindley* (Lady Larpent's Leadwort).—Plumbaginaceæ § Plumbagineæ.—A charming plant of suffruticose habit, with slender zigzag stems, obovate acute leaves, which are finely serrated and fringed on the margin, and close terminal heads of intense violet-coloured flowers, with a little red in the throat; they are produced in the greatest profusion. Native of China; growing, rarely, on the ruined ramparts of Shanghai. Introduced in 1846. Flowers throughout the summer and autumn. *Culture.*—Half-hardy; very valuable for bedding out; *dry* light soil; propagated by cuttings. (281)

HABRANTHUS GRACILIFOLIUS, *Herbert* (slender-leaved Habranth).—Amaryllidaceæ § Amarylleæ.—A small bulbous plant, with very long, slender, channelled leaves, and a stem rising about six inches high, terminated by one or two drooping flowers, which are trumpet-shaped, composed of six segments of a pale purple colour, green at the base; the flowers close at night and expand in the sun. A native near Maldonado on the River Plate. Introduced in 1821. Flowers in September. *Culture.*—Nearly hardy; requires a hot, dry situation, free loam, plenty of water while growing, and perfect rest afterwards; propagated by offsets or seeds. (282)

VIBURNUM RUGOSUM, *Persoon* (rough-leaved Viburnum).—Caprifoliaceæ § Sambuceæ.—A shrubby plant, rising to the height of five or more feet, with opposite, broadly ovate, rough leaves, clothed with hairs on the under side, and with large terminal bunches of white flowers; the flowers are small, and divided into five segments. A native of the Canary Islands. Introduced in 1796. Flowers in April. *Culture.*—Requires a greenhouse; moderately rich loamy soil; propagated readily by cuttings or layers. (283)



INGA PULCHERRIMA.

The plant known in our gardens as the *Inga pulcherrima* is allied to the Mimosas, and Acacias, many species of which are well known to be highly ornamental either in their foliage or blossoms. The Ingas—at least many of them, and our present subject among the number—are if possible still more ornamental than Mimosas or Acacias, in consequence of their more highly coloured flowers. Our present subject belongs to a group separated from the genus Inga, and named Calliandra, which literally signifies "beautiful stamens," and is exceedingly appropriate to these plants, whose very beautiful blossoms appear to consist entirely of tufts of coloured threads, the conspicuous portion being, in fact, the stamens in a high state of development.

The cut introduced at the head of these remarks will give a very good idea of the general appearance of the plant, which is a shrub, in habit not very much branched. The light and elegant twice-pinnate leaves will at once be understood; but our artist has not been so successful in representing the blossoms: these, in fact, consist as already intimated of several little tufts of fine rich scarlet threads or stamens, collected into drooping tassel-like heads, whose size, outline, and position are shown sufficiently in the cut. In its general characteristics, this plant bears considerable resemblance to the *Inga* (or *Calliandra*) *kermesina*.

The *Inga pulcherrima* is recorded as a native of Mexico, and is said to have been introduced to this country in 1822. The flowers are produced in winter and the early part of spring.

In its cultivation it requires a lightish soil, composed of equal parts of turfy peat and loam, with an admixture of sand to render it open; the soil should be rough and free, the pots moderate-sized, and well drained. After flowering, it should be cut in a little if necessary, repotted, and set to grow in a moist stove heat, but not in too confined a part of the stove; in this position it may be kept till it has formed good shoots, or say till about May or June. During the summer season, and through the early part of the autumn, they should be placed in a greenhouse temperature, where their growth will become arrested and the plants gradually ripened, and they will be brought to a state of inactivity and repose, which will prepare them for the development of their blossoms, and impart to them the energy requisite to produce vigorous growth afterwards.

The irritability which is observed in various species of Mimosæ, and which is familiar to almost every one in the case of the common annual sensitive plant (*Mimosa pudica,* and *M. sensitiva*), is in a slight degree present in the *Inga pulcherrima* when it is growing in a warm atmosphere; under these circumstances, if the young leaves are roughly pressed, or exposed to a strong current of air, or a depression of temperature, the leaflets contract and fold together, soon afterwards expanding and attaining their usual position. In the greenhouse, even in the brightest and warmest days of winter, the leaflets do not become at all expanded.

The Ingas belong as already intimated to that group of the natural order Leguminaceæ, which includes the Acacias, Mimosas, and allied plants; this group is technically called Mimosæ.

PINE APPLES IN THE OPEN AIR.

Mr. Barnes, of Bicton, has tried the experiment of placing some pine plants out in the kitchen garden at that place. This was done in May, the ground being prepared by digging out the soil as for celery trenches, the soil thrown out forming a back right and left for shelter; the trenches were filled in with old hot-bed material, chiefly leaves, among which the pots were plunged; the whole surface, banks and all, was then covered with a layer two inches thick of charred straw. The plants had blossomed and the fruit was set before they were put out. Mr. Barnes states that after they were put out, the weather took an unfavourable turn, and of some of the flowers which had not been set in-doors, the pips became "blind," causing the fruit to be somewhat deformed. The points of the leaves also received some injury from the unfavourableness of the weather; but as soon as the latter became kind they recovered. Their suckers were very strong, and though somewhat browned at the points of the outside leaves, were healthy; the roots too were of the most healthy description. It having been considered by some that Devonshire was peculiarly favourable to this experiment, Mr. Barnes thought it worth while to keep a register of the temperature of the kitchen garden where the experiment was made; this register was somewhat deficient, inasmuch as it did not commence till the 15th of June; it was continued on till September. During the months in which the experiment was made, the warmest day—the 15th of July—indicated 96° at noon, and the coldest—the 23d of August—48° night. The fruit generally swelled tolerably well, and the quality has been stated to be excellent. The plants experimented on were chiefly Queens, but there were some Jamaicas, Envilles, Sugar-loafs, &c. This experiment is of course altogether different from cultivating the pine-apple in the open air; and few persons will, notwithstanding Mr. Barnes's register, be disposed to think that Devonshire was not by its climate peculiarly adapted to produce the result which he attained.

TRUFFLE CULTURE.

Mr. Tillery, of Welbeck, has recorded his success in cultivating the Truffle (*Gard. Journ.* 1847, 81). He found, in trying its artificial cultivation, that young ones transplanted invariably perished. Those, however, which were full sized, and in a state of ripeness, with all the soil attached in which they grew, communicated their spawn to the place where they were planted, and thus a colony was founded. This was in natural soil in a shrubbery, under thorns, yews, and laurels. Mr. Tillery made up an artificial bed in 1844, under some beech trees, in a sandy soil; it was filled up with muddy deposit full of fresh-water shells from the bottom of a lake; this bed was planted with some old decaying truffles, and the parings of those used in the kitchen, and there were, in January 1847, young truffles found as large as walnuts. Mr. Tillery adds the following hints as the result of his experience:—The situation must be where there is due light and shade, such as under young oaks, thorns, or crab-trees, or beech, where the trees stand singly. The soil must be neither too wet nor too dry, and should be covered slightly with grass or leaves, to keep it from cracking in dry weather—if it does so, in the least, they all perish. The finest and best grow from one and a half to two inches below the surface. The original soil may be taken out eighteen inches deep, and a large stone placed at each corner to mark the bed; then filled in with calcareous soil mixed with small stones, pieces of chalk, marl, or shells of any sort. October and November are the best months for planting, as the ripe ones are most plentiful then. The ripe truffles for planting, should be taken up with the original soil about them, and not disturbed in the least.

CONTEMPORARY WRITINGS,

AND ORIGINAL NOTES CONNECTED WITH HORTICULTURE AND NATURAL HISTORY.

Construction of Vineries.—Mr. R. Reid has described an arrangement for introducing vines planted outside, into the vinery, which he had seen in the garden of Mr. Nash, of Bishop's Stortford. The house was constructed as vineries usually are, except that a board six or eight inches wide is fixed on the wall plate, projecting over the border; and the front sashes instead of hanging perpendicularly when shut, rest on the boards and present an external appearance of being open six inches for the admission of air. There are pieces of board fixed on the munnions each side of the sash, of the same width at bottom as the board above referred to, tapering to nothing at top, and fitted with a rebate for the sash to drop into. The border is made quite up to the wall plate, and the vines introduced through holes in the boards. Mr. Reid thought it an admirable contrivance for facilitating the taking of vines out of the house, which might be done with still greater facility if instead of the hole in the board a notch was made in the front. Mr. Nash attached importance to the vines being allowed to grow up straight, instead of being cramped, as they usually are, in holes through the brickwork. The vines at this place have this year produced an unexampled crop of grapes.

Hothouse building.—A correspondent of the *Gardener's Chronicle* writes:—"When my attention was first directed to sheet glass, I was tempted to pay 1*s.* 4*d.* per foot for it, in London. I found in my greenhouse, at 11 P.M., 15° difference between the bottom and top of the house (the house was glazed with small squares), and the question occurred, how could I equalize the temperature. Sheet glass, and glass air-tight for the bottom lights would, I imagined, effect the desideratum, and, as I afterwards found, I had calculated rightly; for, by having the bottom lights so glazed, at 11 P.M. the thermometers have indicated equal temperatures ever since, and of the good effects of this on grapes I have had abundant proof."

SUBSTITUTE FOR GLASS.—In the *Revue Scientifique et Industrielle*, it is stated that Prof. Schönbein, who invented the gun-cotton, has discovered a material which is equivalent to malleable glass. He renders *papier machée* transparent, by causing it to undergo a certain metamorphosis, which he calls Catalytic. Of this material he forms window-panes, vases, bottles, &c. perfectly impermeable to water, perfectly transparent, and not at all brittle like glass. Whether it will prove useful for garden purposes remains to be seen.

BORDER YELLOW TURNIP.—This variety of turnip is strongly recommended by Mr. Drewett, Sir W. Heathcote's gardener, as a vegetable of excellent quality and very hardy, and therefore well suited for a winter crop (*Gard. Journ.* 1847, 197). A sample of this kind, also called the red-top hybrid, sown in July 1846, stood unharmed through the winter of 1846-7; and when sown about that time—(July or August)—it does not grow beyond the size of ordinary garden turnips.

AMHERSTIA NOBILIS.—This splendid plant, described by Dr. Wallich as "profusely ornamented with pendulous racemes of large vermilion-coloured blossoms, unequalled in the Flora of the East Indies, and perhaps not surpassed in magnificence and elegance in any part of the world," is about to enrich the collections at Kew and Windsor, Captain Munro having recently brought to this country no less than five plants in good condition. The only plant in the country previously was at Chatsworth. The tree is represented to be like the laburnum, but foliage and flowers three times the size; the latter comparable with those of *Erythrina Crista-galli.*

APIOS TUBEROSA.—This plant has been recommended to be cultivated for culinary purposes in aid of the potato crops; the tuberous roots, which grow in strings like beads, Mr. E. A. Hamp finds to be sweet and good in a cooked state. They are not, however, nearly equal to the potato, and as the latter plant stands in a more promising condition than it recently did, as regards future cultivation, it is not likely the Apios will be much cultivated. It may, however, be grown for variety.

RHUBARB BUDS.—These have been recommended for tarts; being taken just as they are emerging, and so as to thin the plantation where too thick. Their use has, however, in some cases, been followed by serious sickness and illness; and as the plant contains much oxalic acid, they can hardly be recommended.

LILIUM LANCIFOLIUM.—These magnificent plants have now been proved to be perfectly hardy, and may be regarded as indispensable ornaments of the flower-garden as well as the conservatory in the autumnal months. Mr. Groom, of Clapham Rise, sent two plants to the meeting of the Horticultural Society in September, each a single stem, bearing upwards of forty flower-buds. They had been lifted out of the open border, where the bulbs had been planted in the common garden soil, well broken up, but not manured—manure being considered unnecessary in the culture of the lily—in the end of November 1845, in a bed, at fifteen inches asunder, and covered 3½ inches deep with light soil. They were not protected in winter in any way; but after the stems died down, the soil was carefully removed down to the bulbs, and replaced by fresh material. The flowers were better coloured than those produced in a greenhouse. Now that these Japan lilies have been ascertained to be hardy, they must become great favourites for out-door decoration in autumn. Mr. Groom has also raised some fine new varieties from seed.

MEUDON PINE-APPLES.—A queen pine-apple, grown at Meudon, and sent to the editor of the *Gardener's Chronicle*, is reported to have weighed eight pounds when cut, and to have been in form, crown, colour, symmetry, and fragrance, faultless, but in flavour worthless. M. Pelvilain, the gardener at Meudon, adopts the method of planting out into a bed of soil—peat, very like English peat, sandy and fibrous, containing rather less iron and more lime than Wimbledon peat. A smart bottom heat is kept up by the agency of stable dung. The bad flavour is alleged to be the result of insufficient airing. M. Pelvilain transplants his plants into the fruiting pit when they approach maturity, and adopts the maiden-plant system, in contradistinction from Mr. Hamilton, who retains the old stocks for an unlimited period. The Meudon plants are always kept in pots in the winter; they are all planted out the first summer, and are fruited either in pots or planted out in the second summer.

VEGETABLE PARASITISM.—M. Decaisne has discovered that Melampyrum, Pedicularis, Odontites, and other Rhinanthaceous plants, are in reality parasites, deriving their support from the roots of the herbage among which they grow. This seems to explain the reason why they are uncultivable. It is a singular physiological fact, that all these parasites are found to be destitute of medullary rays. Prof. Henslow has corroborated M. Decaisne as regards the parasitism of the Odontites. Decaisne thought, from some analogy of structure, that the Sundews would also prove to be parasitical on sphagnum, but this seems to be opposed to further experience. Another well-known plant, unsuspected as a parasite, has been pointed out to be such by W. Mitten, Esq.; this is the *Thesium linophyllum*, whose parasitical attachment to leguminous, labiate, umbelliferous, composite, and gramineous plants, Mr. Mitten has noted.

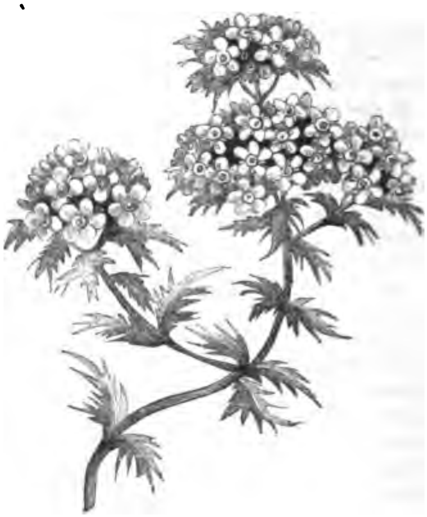
INFLUENCE OF LIGHT ON VEGETATION.—Signor Zantedeschi, an Italian philosopher, in investigating the subject of the influence of light, refracted through coloured glasses, on the vegetation of plants and the germination of seeds, found that every coloured ray is more or less injurious to the vegetation of all vegetables; more or less, because the influence is not equal on all species of plants. He also found by his experiments, that the coloured rays of light exercise a beneficial influence on the germination of seeds, promoting their development.

DOYENNÉ D'ÉTÉ PEAR.—This is a handsome early pear, with the characters of the Doyenné as regards the eye, the segments of the calyx, and the thick stalk; but differing essentially in having a soft skin, partially coloured with deep red. The flesh is whitish, tender, juicy, rich and refreshing, free from the disagreeable musky flavour which many early pears possess. It commences to ripen from the 10th to the 20th of July. It is a prodigious bearer. Mr. Rivers of Sawbridgeworth states that trees on quince-stocks only three feet high have borne this season from two to three dozen each. In this variety the shoots are clear, olive-yellow, with pale brown dots; leaves elliptic, tapering regularly to the point; the petioles long and slender; the colour of the fruit pale green, streaked on the exposed side with deep red. It will form a very agreeable addition to the early varieties already in cultivation. The Doyenné d'été, according to M. Poiteau, has been cultivated for many years at Nantes; though, till lately, but little known at Paris. It is stated in *Le Bon Jardinier*, that it was introduced into the nurseries at Paris by M. Noisette, in 1830. From various resemblances, it appears likely that it may have sprung from the Bellissime d'été, or Jargonelle of the French, which is a very different pear from the English Jargonelle.

The FRONTISPIECE. The following are the names of the plants which are represented in the frontispiece:—Tropæolum speciosum, red; Berberis ilicifolia, orange; Pentstemon Gordoni, pale blue; and Pleroma elegans, purple. These are all of recent introduction, and are fully described in the present and preceding volumes of the *Annals of Horticulture*.

R. CLAY, PRINTER, BREAD STREET HILL.

and potted in fresh soil, gently watered, and placed again in the stove,—or the ground at the back of the pit will do until their buds swell, when they may be placed in the light. Very little more than the stem should be left when they are pruned, because the branches of the season are always enough for the head; by cutting all the branches back to two or three eyes it enables you to select from the great number of new branches those which grow in the best direction to form the head handsome, and the rest are to be removed close with a sharp knife. There is nothing to do afterwards this season but to let them grow, just checking the exuberance of any unruly branch that becomes conspicuously vigorous. Those plants which are bloomed in the house are merely removed when past their beauty to some place where they will be least in the way, and when they drop their leaves they are pruned and kept rather dry, until the growing time comes again. We have confined our remarks to the *Datura arborea*,—but although we have done so, *sanguinea* (bicolor), and *lutea* will do well with the same treatment, although rather different in habit, and totally different in the shape and colour of their flowers. *D. arborea* has very large funnel-shaped flowers, with a bold handsome open mouth; and the double white is a good deal like it; but the other two are tubular, with a slightly enlarged and turned up limb; the bloom is about the same length, but the same size all the way down the tube, and the lip very little enlarged and turned out, showing a small portion of the inner surface. It has been said there is a difference in the degrees of hardness, but we have had all four varieties under the same treatment, answering equally well; but we have found the blooms always more abundant from a matured plant than from the first year's, although they bloom the first year from an eye very well. They are ill-growing plants if not annually attended to in the pruning, which is as requisite to the Daturas as to any plants we know, for they would grow confused and unmanageable, too thick with branches, weakly, and perhaps scarcely throw a bloom where there ought to be a dozen. There must be some pains taken to keep them from the red spider; but this applies to all the plants in the stove, and what will cure one will cure another, but uniform heat, occasional moisture, sulphur and water now and then sprinkled on the pipes, and if necessary syringed under the leaves of the plant, will prevent this. Red spider, however, rarely does mischief; the plant, when neglected, is subject to it, and it may be looked upon rather as the effect of bad health than the cause. It is no use cleaning a plant unless it be got into health again.



TRIPTILION SPINOSUM.

(*Ruiz and Pavon.*)

THE SPINY TRIPTILION.

This is an uncommon plant, though it has been for some years introduced. It is, nevertheless, a plant of very considerable beauty, so that its rarity must be attributed either to the difficulty attending its cultivation, or to the slow means of propagation which it affords. Both these causes have, probably, had some share in limiting its cultivation; for, on the one hand, though cultivable, it is decidedly one of those which are commonly called "shy growing," or "miffy" plants; and, on the other, it does not afford such facilities for propagation as is usually met with in herbaceous perennials, to which class of subjects it belongs. We must, however, recommend it to more extended notice, for the colour of its gay and brilliant blossoms can scarcely be dispensed with among pot plants required to bloom during summer, and their permanence is a great additional recommendation. The following remarks, it is hoped, will serve to do away, in some measure, with the difficulties which have been supposed to hang around its cultivation.

As already remarked, it is a perennial herbaceous plant, attaining, when full grown, about the height of two feet. It has a thickish fleshy root, somewhat in the way of those of the dahlia, but altogether smaller. The stems are numerous, slender, decumbent, and flexuose, and everywhere clothed with hairs. The leaves are of two kinds; the root leaves, that is, those which proceed at once from the crown of the plant, are pinnatifid, and spring up in autumn after the flowering stems have died and been removed, remaining during winter, and perishing either in great part, or altogether, before the plant again reaches its blooming condition; the stem leaves are mostly very deeply cut and jagged; irregularly placed along the stem, and without stalks, the segments as well as the point of the leaf being armed with a long stiff spinous point. The flowers grow at the top of the stems in densely crowded fasciculated corymbs; they are syngenesious, or composite, and each consist of five two-lipped florets, the outer lip of a most beautiful and enduring blue colour, and the inner lip small and yellow; these florets are arranged so as to form a small roundish "flower," as it would be popularly called, but more properly a "capitulum," or flower head, for each of the five florets are equivalent to the parts which in other plants are understood as individual flowers. Sometimes, in the case of cultivated plants, these flowers are succeeded by seeds, but usually seeds are but sparingly produced.

The present plant has a considerable geographical range, being found near Valparaiso, the city of Conception, and as far south as between Valdivia and Osoro, in fields and plains. It is a great favourite with the inhabitants of Chili, on account of the enduring colour of its blossoms; they term it, *Siempreviva*, and employ it extensively for ornamental purposes. It was first raised in England in 1827, by Mr. Frost, gardener to the Countess of Grenville, at Dropmore, but had previously been known for a long time to Botanists. It blooms about the month of July. Besides the name here adopted, it has been called *Naussauvia spinosa* (Don), and *Triptilion laciniatum* (Willdenow).

The greatest difficulty in the artificial cultivation of this plant lies in its safe preservation during the winter, not, however, so much from the effects of cold, (for it will bear even some degrees of frost without injury,) as from the effects of the dampness and closeness of the atmosphere, which at that season is more or less felt by all delicate plants. The effort required, therefore, is to keep it from what is technically termed "damping off," that is, becoming mouldy and decayed. To have a fair chance the grower should commence with a strong and healthy plant. After the flowers and their stems have decayed, the plants should be repotted; they should be taken out of the pots they have been kept in, the old soil partially removed with great care from among their roots, and then repotted into as small a pot as the size of the plant and the number of roots may allow; three-inch pots would in most cases be large enough, unless, indeed, the plants form—for so rare a subject—very large masses: the soil used should be sandy loam, mixed with about a third of good clean leaf mould; the pots must be well drained, with a large crock, and an inch or more of smaller ones, covered with a little rough leaf-mould. The plants should be potted rather high in the pot, that is, their base should be nearly level with the rim of the pot, the soil sloping slightly to the outer edge. After this potting, which will take place in September, the plants must be set in a cool dry frame, where they may be sheltered from rains, and in due time from night cold, but they need not be kept very close, so that they are protected in these respects. In October remove them to a front shelf, near the light, in a *cool* greenhouse, where they may get air whenever it is admitted. This is safer than a pit, although, if they can be secured from damp and severe frosts, a pit will preserve them equally well. Continue this till spring advances. During all this time water them very carefully; take care to let them become moderately dry—not so dry as to droop—before a fresh supply is given, and then give them just enough to thoroughly moisten the soil, and see that it drains readily away. In spring, when these begin to grow freely, they may be shifted into pots a little larger, still very carefully watering them, and keeping them in a light airy position. As summer draws on, the lower leaves are apt to perish, which is probably owing, in some measure, to the dry hot atmosphere to which they are then exposed: at this period, therefore, a cool frame would certainly be preferable for them, in which they may be shaded during the hottest part of the day, and the material they stand on sprinkled, so as to keep them cool; at night, and at all other times, they should have abundance of air. If the pots get full of roots—not else—before the blossoms are much advanced, they may have a larger pot; but a five-inch pot will be large enough for a plant of considerable age and strength. We should, however, recommend the plants to be grown in considerable masses, instead of being too frequently divided into a number of smaller plants, the effect of the larger specimens being infinitely preferable to that of small puny scraps.

Propagation may be effected by division of the plant as mentioned above; and this should be done early in the autumn, or as soon after flowering as possible, in order that the plants may get well established before winter: these plants would subsequently require the treatment already sketched out. Whenever seeds are produced, they should be sown as soon as ripe enough, in pots of sandy soil, and placed in a close pit or hot-bed to induce speedy germination. The young plants, as soon as fairly developed, should be transplanted singly into small pots, using very light sandy soil;

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